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<p>(54) Title: HUMAN GENES DIFFERENTIALLY EXPRESSED IN COLORECTAL CANCER</p> <p>(57) Abstract</p> <p>This invention relates to novel human genes, to proteins expressed by the genes, and to variants of the proteins. The invention also relates to diagnostic assays and therapeutic agents related to the genes and proteins, including probes, antisense constructs, and antibodies. The subject nucleic acids have been found to be differentially regulated in tumor cells, particularly in colon cancer tissue.</p>		

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## 5

This application is based on Provisional Application Nos. 60/117,393, filed January 27, 1999, and 60/098,639, filed August 31, 1998, which are incorporated herein by reference in their entirety.

## Field of the Invention

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Colorectal carcinoma is a malignant neoplastic disease. There is a high incidence of colorectal carcinoma in the Western world, particularly in the United States. Tumors of this type often metastasize through lymphatic and vascular channels. Many patients with colorectal carcinoma eventually die from this disease. In fact, it is estimated that 62,000 persons in the United States alone die of colorectal carcinoma annually.

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prognosis for the patient is poor, even after surgical resection of the cancerous tissue. Early detection of colorectal cancer therefore is important in that detection may significantly reduce its morbidity.

Invasive diagnostic methods such as endoscopic examination allow for direct  
5 visual identification, removal, and biopsy of potentially cancerous growths such as polyps. Endoscopy is expensive, uncomfortable, inherently risky, and therefore not a practical tool for screening populations to identify those with colorectal cancer. Non-invasive analysis of stool samples for characteristics indicative of the presence of colorectal cancer or precancer is a preferred alternative for early diagnosis, but no  
10 known diagnostic method is available which reliably achieves this goal. A reliable, non-invasive, and accurate technique for diagnosing colon cancer at an early stage would help save many lives.

#### Summary of the Invention

15 The present invention provides nucleic acid sequences and proteins encoded thereby, as well as probes derived from the nucleic acid sequences, antibodies directed to the encoded proteins, and diagnostic methods for detecting cancerous cells, especially colon cancer cells. The sequences disclosed herein have been found to be  
20 differentially expressed in samples obtained from colon cancer cell lines and/or colon cancer tissue. The 544 sequences that were obtained were analyzed by "blasting" the sequences against the publicly available databases; based upon the Blast search results it was found that SEQ ID Nos: 1-35 contained novel sequences, SEQ ID Nos: 36-168 contained EST sequences and SEQ ID Nos: 169-544 contained known sequences.

25 In one aspect, the invention provides an isolated nucleic acid comprising a nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-544 or a sequence complementary thereto. In a related embodiment, the nucleic acid is at least about 80% or about 100% identical to a sequence corresponding to at least about 12, at least about 15, at least about 25, or at least about  
30 40 consecutive nucleotides up to the full length of one of SEQ ID Nos. 1-544 or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment. In certain embodiments, a nucleic acid of the present invention includes at least about five, at least about ten, or at least about twenty



nucleic acids from a region designated as novel in Table 2. In certain other embodiments, a nucleic acid of the present invention includes at least about five, at least about ten, or at least about twenty nucleotides which are not included in corresponding clones whose accession numbers are listed in Table 2.

5 In another aspect, the invention provides an isolated nucleic acid comprising a nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. In a related embodiment, the nucleic acid is at least about 80% or about 100% identical to a sequence corresponding to at least about 12, at least about 15, at  
10 least about 25, or at least about 40 consecutive nucleotides up to the full length of one of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35 or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment. In certain embodiments, a nucleic acid of the present invention includes at least about five, at least about ten, or at least about twenty nucleic acids from a region designated  
15 as novel in Table 2. In certain other embodiments, a nucleic acid of the present invention includes at least about five, at least about ten, or at least about twenty nucleotides which are not included in corresponding clones whose accession numbers are listed in Table 2.

In one embodiment, the invention provides a nucleic acid comprising a  
20 nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, and a transcriptional regulatory sequence operably linked to the nucleotide sequence to render the nucleotide sequence suitable for use as an expression vector. In another embodiment, the nucleic acid may be included in an expression vector capable  
25 of replicating in a prokaryotic or eukaryotic cell. In a related embodiment, the invention provides a host cell transfected with the expression vector.

In another embodiment, the invention provides a transgenic animal having a transgene of a nucleic acid comprising a nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-168, preferably SEQ ID Nos 1-  
30 35, or a sequence complementary thereto incorporated in cells thereof. The transgene modifies the level of expression of the nucleic acid, the stability of a mRNA transcript of the nucleic acid, or the activity of the encoded product of the nucleic acid.

In yet another embodiment, the invention provides substantially pure nucleic acid which hybridizes under stringent conditions to a nucleic acid probe corresponding to at least about 12, at least about 15, at least about 25, or at least about 40 consecutive nucleotides up to the full length of one of SEQ ID Nos. 1-168, preferably SEQ ID Nos 1-35, or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment. The invention also provides an antisense oligonucleotide analog which hybridizes under stringent conditions to at least 12, at least 25, or at least 50 consecutive nucleotides of one of SEQ ID Nos. 1-544 up to the full length of one of SEQ ID Nos. 1-544 or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment, and which is resistant to cleavage by a nuclease, preferably an endogenous endonuclease or exonuclease.

In another embodiment, the invention provides a probe/primer comprising a substantially purified oligonucleotide, said oligonucleotide containing a region of nucleotide sequence which hybridizes under stringent conditions to at least about 12, at least about 15, at least about 25, or at least about 40 consecutive nucleotides of sense or antisense sequence selected from SEQ ID Nos. 1-168 up to the full length of one of SEQ ID Nos. 1-168 or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment. In preferred embodiments, the probe selectively hybridizes with a target nucleic acid. In another embodiment, the probe may include a label group attached thereto and able to be detected. The label group may be selected from radioisotopes, fluorescent compounds, enzymes, and enzyme co-factors. The invention further provides arrays of at least about 10, at least about 25, at least about 50, or at least about 100 different probes as described above attached to a solid support.

In yet another embodiment, the invention pertains to a method of determining the phenotype of a cell, comprising detecting the differential expression, relative to a normal cell, of at least one nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544, wherein the nucleic acid is differentially expressed by at least a factor of two, at least a factor of five, at least a factor of twenty, or at least a factor of fifty.

In another aspect, the invention provides polypeptides encoded by the subject nucleic acids. In one embodiment, the invention pertains to a polypeptide including an

amino acid sequence encoded by a nucleic acid comprising a nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-168 or a sequence complementary thereto, or a fragment comprising at least about 25, or at least about 40 amino acids thereof. Further provided are antibodies immunoreactive  
5 with these polypeptides.

In still another aspect, the invention provides diagnostic methods. In one embodiment, the invention pertains to a method for determining the phenotype of cells from a patient by providing a nucleic acid probe comprising a nucleotide sequence having at least 12, at least about 15, at least about 25, or at least about 40  
10 consecutive nucleotides represented in a sequence of SEQ ID Nos. 1-544 up to the full length of one of SEQ ID Nos. 1-544 or a sequence complementary thereto or up to the full length of the gene of which said sequence is a fragment, obtaining a sample of cells from a patient, providing a second sample of cells substantially all of which are non-cancerous, contacting the nucleic acid probe under stringent conditions with  
15 mRNA of each of said first and second cell samples, and comparing (a) the amount of hybridization of the probe with mRNA of the first cell sample, with (b) the amount of hybridization of the probe with mRNA of the second cell sample, wherein a difference of at least a factor of two, at least a factor of five, at least a factor of twenty, or at least a factor of fifty in the amount of hybridization with the mRNA of the first cell sample  
20 as compared to the amount of hybridization with the mRNA of the second cell sample is indicative of the phenotype of cells in the first cell sample. Determining the phenotype includes determining the genotype, as the term is used herein.

In another embodiment, the invention provides a test kit for identifying an transformed cells, comprising a probe/primer as described above, for measuring a  
25 level of a nucleic acid which hybridizes under stringent conditions to a nucleic acid of SEQ ID Nos. 1-544 in a sample of cells isolated from a patient. In certain embodiments, the kit may further include instructions for using the kit, solutions for suspending or fixing the cells, detectable tags or labels, solutions for rendering a nucleic acid susceptible to hybridization, solutions for lysing cells, or solutions for the  
30 purification of nucleic acids.

In another embodiment, the invention provides a method of determining the phenotype of a cell, comprising detecting the differential expression, relative to a normal cell, of at least one protein encoded by a nucleic acid which hybridizes under

stringent conditions to one of SEQ ID Nos. 1-544, wherein the protein is differentially expressed by at least a factor of two, at least a factor of five, at least a factor of twenty, or at least a factor of fifty. In one embodiment, the level of the protein is detected in an immunoassay. The invention also pertains to a method for determining the

5 presence or absence of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-168 in a cell, comprising contacting the cell with a probe as described above. The invention further provides a method for determining the presence or absence of a subject polypeptide encoded by a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-168 in a cell,

10 comprising contacting the cell with an antibody as described above. In yet another embodiment, the invention provides a method for determining the presence of an aberrant mutation (e.g., deletion, insertion, or substitution of nucleic acids) or aberrant methylation in a gene which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-168 or a sequence complementary thereto, comprising collecting a

15 sample of cells from a patient, isolating nucleic acid from the cells of the sample, contacting the nucleic acid sample with one or more primers which specifically hybridize to a nucleic acid sequence of SEQ ID Nos. 1-544 under conditions such that hybridization and amplification of the nucleic acid occurs, and comparing the presence, absence, or size of an amplification product to the amplification product of a

20 normal cell.

In one embodiment, the invention provides a test kit for identifying transformed cells, comprising an antibody specific for a protein encoded by a nucleic acid which hybridizes under stringent conditions to any one of SEQ Nos. 1-544. In certain embodiments, the kit further includes instructions for using the kit. In certain

25 embodiments, the kit may further include instructions for using the kit, solutions for suspending or fixing the cells, detectable tags or labels, solutions for rendering a polypeptide susceptible to the binding of an antibody, solutions for lysing cells, or solutions for the purification of polypeptides.

In yet another aspect, the invention provides pharmaceutical compositions

30 including the subject nucleic acids. In one embodiment, an agent which alters the level of expression in a cell of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto is identified by providing a cell, treating the cell with a test agent, determining the level

of expression in the cell of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto, and comparing the level of expression of the nucleic acid in the treated cell with the level of expression of the nucleic acid in an untreated cell, wherein a change in the level of expression of the nucleic acid in the treated cell relative to the level of expression of the nucleic acid in the untreated cell is indicative of an agent which alters the level of expression of the nucleic acid in a cell. The invention further provides a pharmaceutical composition comprising an agent identified by this method. In another embodiment, the invention provides a pharmaceutical composition which includes a polypeptide encoded by a nucleic acid having a nucleotide sequence that hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto. In one embodiment, the invention pertains to a pharmaceutical composition comprising a nucleic acid including a sequence which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto.

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#### Brief Description of the Figure

The figure depicts an exemplary assay result for determining differential expression of gene products in cells.

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#### Detailed Description of the Invention

The invention relates to nucleic acids having the disclosed nucleotide sequences (SEQ ID Nos. 1-544), as well as full length cDNA, mRNA, and genes corresponding to these sequences, and to polypeptides and proteins encoded by these nucleic acids and genes, and portions thereof.

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Also included are polypeptides and proteins encoded by the nucleic acids of SEQ ID Nos. 1-544. The various nucleic acids that can encode these polypeptides and proteins differ because of the degeneracy of the genetic code, in that most amino acids are encoded by more than one triplet codon. The identity of such codons is well known in this art, and this information can be used for the construction of the nucleic acids within the scope of the invention.

30

Nucleic acids encoding polypeptides and proteins that are variants of the polypeptides and proteins encoded by the nucleic acids and related cDNA and genes are also within the scope of the invention. The variants differ from wild-type protein in having one or more amino acid substitutions that either enhance, add, or diminish a

biological activity of the wild-type protein. Once the amino acid change is selected, a nucleic acid encoding that variant is constructed according to the invention.

The following detailed description discloses how to obtain or make full-length cDNA and human genes corresponding to the nucleic acids, how to express these  
5 nucleic acids and genes, how to identify structural motifs of the genes, how to identify the function of a protein encoded by a gene corresponding to an nucleic acid, how to use nucleic acids as probes in mapping and in tissue profiling, how to use the corresponding polypeptides and proteins to raise antibodies, and how to use the nucleic acids, polypeptides, and proteins for therapeutic and diagnostic purposes.

10 The sequences investigated herein have been found to be differentially expressed in samples obtained from colon cancer tissue. However, it is also believed that these sequences may also have utility with other types of cancer. In a related application, PCT/IB99/01062, filed June 9, 1999, the inventors disclosed nucleic acid sequences that are differentially expressed in colon cancer-derived cell lines, such as  
15 SW 480, relative to the expression levels in normal tissue, e.g., normal colon tissue and/or normal non-colon tissue. In this application, Table 3 lists nucleic acid sequences which are over-expressed in both cancer cell line SW 480 as well colon cancer tissue obtained from various patients.

Accordingly, certain aspects of the present invention relate to nucleic acids  
20 differentially expressed in tumor tissue, especially colon cancer cell lines, polypeptides encoded by such nucleic acids, and antibodies immunoreactive with these polypeptides, and preparations of such compositions. Moreover, the present invention provides diagnostic and therapeutic assays and reagents for detecting and treating disorders involving, for example, aberrant expression of the subject nucleic  
25 acids.

#### I. General

This invention relates in part to novel methods for identifying and/or classifying cancerous cells present in a human tumors, particularly in solid tumors,  
30 e.g., carcinomas and sarcomas, such as, for example, breast or colon cancers. The method uses genes that are differentially expressed in cancer cell lines and/or cancer tissue compared with related normal cells, such as normal colon cells, and thereby

identifies or classifies tumor cells by the upregulation and/or downregulation of expression of particular genes, an event which is implicated in tumorigenesis.

Upregulation or increased expression of certain genes such as oncogenes, act to promote malignant growth. Downregulation or decreased expression of genes such as tumor suppressor genes also promotes malignant growth. Thus, alteration in the expression of either type of gene is a potential diagnostic indicator for determining whether a subject is at risk of developing or has cancer, e.g., colon cancer.

Accordingly, in one aspect, the invention also provides biomarkers, such as nucleic acid markers, for human tumor cells, e.g., for colon cancer cells. The invention also provides proteins encoded by these nucleic acid markers.

The invention also features methods for identifying drugs useful for treatment of such cancer cells, and for treatment of a cancerous condition, such as colon cancer. Unlike prior methods, the invention provides a means for identifying cancer cells at an early stage of development, so that premalignant cells can be identified prior to their spreading throughout the human body. This allows early detection of potentially cancerous conditions, and treatment of those cancerous conditions prior to spread of the cancerous cells throughout the body, or prior to development of an irreversible cancerous condition.

## II. Definitions

For convenience, the meaning of certain terms and phrases used in the specification, examples, and appended claims, are provided below.

The term "an aberrant expression", as applied to a nucleic acid of the present invention, refers to level of expression of that nucleic acid which differs from the level of expression of that nucleic acid in healthy tissue, or which differs from the activity of the polypeptide present in a healthy subject. An activity of a polypeptide can be aberrant because it is stronger than the activity of its native counterpart. Alternatively, an activity can be aberrant because it is weaker or absent relative to the activity of its native counterpart. An aberrant activity can also be a change in the activity; for example, an aberrant polypeptide can interact with a different target peptide. A cell can have an aberrant expression level of a gene due to overexpression or underexpression of that gene.

The term "agonist", as used herein, is meant to refer to an agent that mimics or upregulates (e.g., potentiates or supplements) the bioactivity of a protein. An agonist can be a wild-type protein or derivative thereof having at least one bioactivity of the wild-type protein. An agonist can also be a compound that upregulates expression of a gene or which increases at least one bioactivity of a protein. An agonist can also be a compound which increases the interaction of a polypeptide with another molecule, e.g., a target peptide or nucleic acid.

The term "allele", which is used interchangeably herein with "allelic variant", refers to alternative forms of a gene or portions thereof. Alleles occupy the same locus or position on homologous chromosomes. When a subject has two identical alleles of a gene, the subject is said to be homozygous for that gene or allele. When a subject has two different alleles of a gene, the subject is said to be heterozygous for the gene. Alleles of a specific gene can differ from each other in a single nucleotide, or several nucleotides, and can include substitutions, deletions, and/or insertions of nucleotides. An allele of a gene can also be a form of a gene containing mutations.

The term "allelic variant of a polymorphic region of a gene" refers to a region of a gene having one of several nucleotide sequences found in that region of the gene in other individuals.

"Antagonist" as used herein is meant to refer to an agent that downregulates (e.g., suppresses or inhibits) at least one bioactivity of a protein. An antagonist can be a compound which inhibits or decreases the interaction between a protein and another molecule, e.g., a target peptide or enzyme substrate. An antagonist can also be a compound that downregulates expression of a gene or which reduces the amount of expressed protein present.

The term "antibody" as used herein is intended to include whole antibodies, e.g., of any isotype (IgG, IgA, IgM, IgE, etc), and includes fragments thereof which are also specifically reactive with a vertebrate, e.g., mammalian, protein. Antibodies can be fragmented using conventional techniques and the fragments screened for utility in the same manner as described above for whole antibodies. Thus, the term includes segments of proteolytically-cleaved or recombinantly-prepared portions of an antibody molecule that are capable of selectively reacting with a certain protein. Nonlimiting examples of such proteolytic and/or recombinant fragments include Fab, F(ab')<sub>2</sub>, Fab', Fv, and single chain antibodies (scFv) containing a V[L] and/or V[H]



domain joined by a peptide linker. The scFv's may be covalently or non-covalently linked to form antibodies having two or more binding sites. The subject invention includes polyclonal, monoclonal, or other purified preparations of antibodies and recombinant antibodies.

5           The phenomenon of "apoptosis" is well known, and can be described as a programmed death of cells. As is known, apoptosis is contrasted with "necrosis", a phenomenon when cells die as a result of being killed by a toxic material, or other external effect. Apoptosis involves chromatic condensation, membrane blebbing, and fragmentation of DNA, all of which are generally visible upon microscopic  
10   examination.

          A disease, disorder, or condition "associated with" or "characterized by" an aberrant expression of a nucleic acid refers to a disease, disorder, or condition in a subject which is caused by, contributed to by, or causative of an aberrant level of expression of a nucleic acid.

15           As used herein the term "bioactive fragment of a polypeptide" refers to a fragment of a full-length polypeptide, wherein the fragment specifically agonizes (mimics) or antagonizes (inhibits) the activity of a wild-type polypeptide. The bioactive fragment preferably is a fragment capable of interacting with at least one other molecule, e.g., protein, small molecule, or DNA, which a full length protein can  
20   bind.

          "Biological activity" or "bioactivity" or "activity" or "biological function", which are used interchangeably, herein mean an effector or antigenic function that is directly or indirectly performed by a polypeptide (whether in its native or denatured conformation), or by any subsequence thereof. Biological activities include binding  
25   to polypeptides, binding to other proteins or molecules, activity as a DNA binding protein, as a transcription regulator, ability to bind damaged DNA, etc. A bioactivity can be modulated by directly affecting the subject polypeptide. Alternatively, a bioactivity can be altered by modulating the level of the polypeptide, such as by modulating expression of the corresponding gene.

30           The term "biomarker" refers a biological molecule, e.g., a nucleic acid, peptide, hormone, etc., whose presence or concentration can be detected and correlated with a known condition, such as a disease state.

"Cells," "host cells", or "recombinant host cells" are terms used interchangeably herein. It is understood that such terms refer not only to the particular subject cell but to the progeny or potential progeny of such a cell. Because certain modifications may occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term as used herein.

A "chimeric polypeptide" or "fusion polypeptide" is a fusion of a first amino acid sequence encoding one of the subject polypeptides with a second amino acid sequence defining a domain (e.g., polypeptide portion) foreign to and not substantially homologous with any domain of the subject polypeptide. A chimeric polypeptide may present a foreign domain which is found (albeit in a different polypeptide) in an organism which also expresses the first polypeptide, or it may be an "interspecies," "intergenic," etc., fusion of polypeptide structures expressed by different kinds of organisms. In general, a fusion polypeptide can be represented by the general formula  $(X)_n-(Y)_m-(Z)_n$ , wherein Y represents a portion of the subject polypeptide, and X and Z are each independently absent or represent amino acid sequences which are not related to the native sequence found in an organism, or which are not found as a polypeptide chain contiguous with the subject sequence, where m is an integer greater than or equal to one, and each occurrence of n is, independently, 0 or an integer greater than or equal to 1 (n and m are preferably no greater than 5 or 10).

A "delivery complex" shall mean a targeting means (e.g., a molecule that results in higher affinity binding of a nucleic acid, protein, polypeptide or peptide to a target cell surface and/or increased cellular or nuclear uptake by a target cell). Examples of targeting means include: sterols (e.g., cholesterol), lipids (e.g., a cationic lipid, virosome or liposome), viruses (e.g., adenovirus, adeno-associated virus, and retrovirus), or target cell-specific binding agents (e.g., ligands recognized by target cell specific receptors). Preferred complexes are sufficiently stable *in vivo* to prevent significant uncoupling prior to internalization by the target cell. However, the complex is cleavable under appropriate conditions within the cell so that the nucleic acid, protein, polypeptide or peptide is released in a functional form.

As is well known, genes or a particular polypeptide may exist in single or multiple copies within the genome of an individual. Such duplicate genes may be identical or may have certain modifications, including nucleotide substitutions,

additions or deletions, which all still code for polypeptides having substantially the same activity. The term "DNA sequence encoding a polypeptide" may thus refer to one or more genes within a particular individual. Moreover, certain differences in nucleotide sequences may exist between individual organisms, which are called  
5 alleles. Such allelic differences may or may not result in differences in amino acid sequence of the encoded polypeptide yet still encode a polypeptide with the same biological activity.

The term "equivalent" is understood to include nucleotide sequences encoding functionally equivalent polypeptides. Equivalent nucleotide sequences will include  
10 sequences that differ by one or more nucleotide substitutions, additions or deletions, such as allelic variants; and will, therefore, include sequences that differ from the nucleotide sequence of the nucleic acids shown in SEQ ID NOs: 1-544 due to the degeneracy of the genetic code.

As used herein, the terms "gene", "recombinant gene", and "gene construct"  
15 refer to a nucleic acid of the present invention associated with an open reading frame, including both exon and (optionally) intron sequences.

A "recombinant gene" refers to nucleic acid encoding a polypeptide and comprising exon sequences, though it may optionally include intron sequences which are derived from, for example, a related or unrelated chromosomal gene. The term  
20 "intron" refers to a DNA sequence present in a given gene which is not translated into protein and is generally found between exons.

The term "growth" or "growth state" of a cell refers to the proliferative state of a cell as well as to its differentiative state. Accordingly, the term refers to the phase of the cell cycle in which the cell is, e.g., G0, G1, G2, prophase, metaphase, or telophase,  
25 as well as to its state of differentiation, e.g., undifferentiated, partially differentiated, or fully differentiated. Without wanting to be limited, differentiation of a cell is usually accompanied by a decrease in the proliferative rate of a cell.

"Homology" or "identity" or "similarity" refers to sequence similarity between two peptides or between two nucleic acid molecules, with identity being a more strict  
30 comparison. Homology and identity can each be determined by comparing a position in each sequence which may be aligned for purposes of comparison. When a position in the compared sequence is occupied by the same base or amino acid, then the molecules are identical at that position. A degree of homology or similarity or

identity between nucleic acid sequences is a function of the number of identical or matching nucleotides at positions shared by the nucleic acid sequences. A degree of identity of amino acid sequences is a function of the number of identical amino acids at positions shared by the amino acid sequences. A degree of homology or similarity  
5 of amino acid sequences is a function of the number of amino acids, i.e., structurally related, at positions shared by the amino acid sequences. An "unrelated" or "non-homologous" sequence shares less than 40% identity, though preferably less than 25% identity, with one of the sequences of the present invention.

The term "percent identical" refers to sequence identity between two amino  
10 acid sequences or between two nucleotide sequences. Identity can each be determined by comparing a position in each sequence which may be aligned for purposes of comparison. When an equivalent position in the compared sequences is occupied by the same base or amino acid, then the molecules are identical at that position; when the equivalent site occupied by the same or a similar amino acid residue (e.g., similar  
15 in steric and/or electronic nature), then the molecules can be referred to as homologous (similar) at that position. Expression as a percentage of homology, similarity, or identity refers to a function of the number of identical or similar amino acids at positions shared by the compared sequences. Various alignment algorithms and/or programs may be used, including FASTA, BLAST, or ENTREZ. FASTA and  
20 BLAST are available as a part of the GCG sequence analysis package (University of Wisconsin, Madison, Wis.), and can be used with, e.g., default settings. ENTREZ is available through the National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health, Bethesda, Md. In one embodiment, the percent identity of two sequences can be determined by the GCG program with a  
25 gap weight of 1, e.g., each amino acid gap is weighted as if it were a single amino acid or nucleotide mismatch between the two sequences.

Other techniques for alignment are described in Methods in Enzymology, vol. 266: Computer Methods for Macromolecular Sequence Analysis (1996), ed. Doolittle, Academic Press, Inc., a division of Harcourt Brace & Co., San Diego, California,  
30 USA. Preferably, an alignment program that permits gaps in the sequence is utilized to align the sequences. The Smith-Waterman is one type of algorithm that permits gaps in sequence alignments. See Meth. Mol. Biol. 70: 173-187 (1997). Also, the GAP program using the Needleman and Wunsch alignment method can be utilized to

align sequences. An alternative search strategy uses MPSRCH software, which runs on a MASPAR computer. MPSRCH uses a Smith-Waterman algorithm to score sequences on a massively parallel computer. This approach improves ability to pick up distantly related matches, and is especially tolerant of small gaps and nucleotide sequence errors. Nucleic acid-encoded amino acid sequences can be used to search both protein and DNA databases.

Databases with individual sequences are described in Methods in Enzymology, ed. Doolittle, *supra*. Databases include Genbank, EMBL, and DNA Database of Japan (DDBJ).

Preferred nucleic acids have a sequence at least 70%, and more preferably 80% identical and more preferably 90% and even more preferably at least 95% identical to a nucleic acid sequence of a sequence shown in one of SEQ ID NOS: 1-544. Nucleic acids at least 90%, more preferably 95%, and most preferably at least about 98-99% identical with a nucleic sequence represented in one of SEQ ID NOS: 1-544 are of course also within the scope of the invention. In preferred embodiments, the nucleic acid is mammalian.

The term "interact" as used herein is meant to include detectable interactions (e.g., biochemical interactions) between molecules, such as interaction between protein-protein, protein-nucleic acid, nucleic acid-nucleic acid, and protein-small molecule or nucleic acid-small molecule in nature.

The term "isolated" as used herein with respect to nucleic acids, such as DNA or RNA, refers to molecules separated from other DNAs, or RNAs, respectively, that are present in the natural source of the macromolecule. The term isolated as used herein also refers to a nucleic acid or peptide that is substantially free of cellular material, viral material, or culture medium when produced by recombinant DNA techniques, or chemical precursors or other chemicals when chemically synthesized. Moreover, an "isolated nucleic acid" is meant to include nucleic acid fragments which are not naturally occurring as fragments and would not be found in the natural state. The term "isolated" is also used herein to refer to polypeptides which are isolated from other cellular proteins and is meant to encompass both purified and recombinant polypeptides.

The terms "modulated" and "differentially regulated" as used herein refer to both upregulation (i.e., activation or stimulation (e.g., by agonizing or potentiating))

and downregulation (i.e., inhibition or suppression (e.g., by antagonizing, decreasing or inhibiting)).

The term "mutated gene" refers to an allelic form of a gene, which is capable of altering the phenotype of a subject having the mutated gene relative to a subject  
5 which does not have the mutated gene. If a subject must be homozygous for this mutation to have an altered phenotype, the mutation is said to be recessive. If one copy of the mutated gene is sufficient to alter the genotype of the subject, the mutation is said to be dominant. If a subject has one copy of the mutated gene and has a phenotype that is intermediate between that of a homozygous and that of a  
10 heterozygous subject (for that gene), the mutation is said to be co-dominant.

The designation "N", where it appears in the accompanying Sequence Listing, indicates that the identity of the corresponding nucleotide is unknown. "N" should therefore not necessarily be interpreted as permitting substitution with any nucleotide, e.g., A, T, C, or G, but rather as holding the place of a nucleotide whose identity has  
15 not been conclusively determined.

The "non-human animals" of the invention include mammals such as rodents, non-human primates, sheep, dog, cow, chickens, amphibians, reptiles, etc. Preferred non-human animals are selected from the rodent family including rat and mouse, most preferably mouse, though transgenic amphibians, such as members of the  
20 *Xenopus* genus, and transgenic chickens can also provide important tools for understanding and identifying agents which can affect, for example, embryogenesis and tissue formation. The term "chimeric animal" is used herein to refer to animals in which the recombinant gene is found, or in which the recombinant gene is expressed in some but not all cells of the animal. The term "tissue-specific chimeric animal"  
25 indicates that one of the recombinant genes is present and/or expressed or disrupted in some tissues but not others.

As used herein, the term "nucleic acid" refers to polynucleotides such as deoxyribonucleic acid (DNA), and, where appropriate, ribonucleic acid (RNA). The term should also be understood to include, as equivalents, analogs of either RNA or  
30 DNA made from nucleotide analogs, and, as applicable to the embodiment being described, single (sense or antisense) and double-stranded polynucleotides. ESTs, chromosomes, cDNAs, mRNAs, and rRNAs are representative examples of molecules that may be referred to as nucleic acids.

The term "nucleotide sequence complementary to the nucleotide sequence of SEQ ID NO. x" refers to the nucleotide sequence of the complementary strand of a nucleic acid strand having SEQ ID NO. x. The term "complementary strand" is used herein interchangeably with the term "complement". The complement of a nucleic acid strand can be the complement of a coding strand or the complement of a non-coding strand.

The term "polymorphism" refers to the coexistence of more than one form of a gene or portion (e.g., allelic variant) thereof. A portion of a gene of which there are at least two different forms, i.e., two different nucleotide sequences, is referred to as a "polymorphic region of a gene". A polymorphic region can be a single nucleotide, the identity of which differs in different alleles. A polymorphic region can also be several nucleotides long.

A "polymorphic gene" refers to a gene having at least one polymorphic region.

As used herein, the term "promoter" means a DNA sequence that regulates expression of a selected DNA sequence operably linked to the promoter, and which effects expression of the selected DNA sequence in cells. The term encompasses "tissue specific" promoters, i.e., promoters which effect expression of the selected DNA sequence only in specific cells (e.g., cells of a specific tissue). The term also covers so-called "leaky" promoters, which regulate expression of a selected DNA primarily in one tissue, but cause expression in other tissues as well. The term also encompasses non-tissue specific promoters and promoters that constitutively expressed or that are inducible (i.e., expression levels can be controlled).

The terms "protein", "polypeptide", and "peptide" are used interchangeably herein when referring to a gene product.

The term "recombinant protein" refers to a polypeptide of the present invention which is produced by recombinant DNA techniques, wherein generally, DNA encoding a polypeptide is inserted into a suitable expression vector which is in turn used to transform a host cell to produce the heterologous protein. Moreover, the phrase "derived from", with respect to a recombinant gene, is meant to include within the meaning of "recombinant protein" those proteins having an amino acid sequence of a native polypeptide, or an amino acid sequence similar thereto which is generated by mutations including substitutions and deletions (including truncation) of a naturally occurring form of the polypeptide.

"Small molecule" as used herein, is meant to refer to a composition, which has a molecular weight of less than about 5 kD and most preferably less than about 4 kD. Small molecules can be nucleic acids, peptides, polypeptides, peptidomimetics, carbohydrates, lipids or other organic (carbon-containing) or inorganic molecules.

- 5 Many pharmaceutical companies have extensive libraries of chemical and/or biological mixtures, often fungal, bacterial, or algal extracts, which can be screened with any of the assays of the invention to identify compounds that modulate a bioactivity.

As used herein, the term "specifically hybridizes" or "specifically detects" refers to the ability of a nucleic acid molecule of the invention to hybridize to at least a portion of, for example, approximately 6, 12, 15, 20, 30, 50, 100, 150, 200, 300, 350, 400, 500, 750, or 1000 contiguous nucleotides of a nucleic acid designated in any one of SEQ ID Nos: 1-544, or a sequence complementary thereto, or naturally occurring mutants thereof, such that it has less than 15%, preferably less than 10%,  
15 and more preferably less than 5% background hybridization to a cellular nucleic acid (e.g., mRNA or genomic DNA) encoding a different protein. In preferred embodiments, the oligonucleotide probe detects only a specific nucleic acid, e.g., it does not substantially hybridize to similar or related nucleic acids, or complements thereof.

20 "Transcriptional regulatory sequence" is a generic term used throughout the specification to refer to DNA sequences, such as initiation signals, enhancers, and promoters, which induce or control transcription of protein coding sequences with which they are operably linked. In preferred embodiments, transcription of one of the genes is under the control of a promoter sequence (or other transcriptional regulatory  
25 sequence) which controls the expression of the recombinant gene in a cell-type in which expression is intended. It will also be understood that the recombinant gene can be under the control of transcriptional regulatory sequences which are the same or which are different from those sequences which control transcription of the naturally-occurring forms of the polypeptide.

30 As used herein, the term "transfection" means the introduction of a nucleic acid, e.g., via an expression vector, into a recipient cell by nucleic acid-mediated gene transfer. "Transformation", as used herein, refers to a process in which a cell's genotype is changed as a result of the cellular uptake of exogenous DNA or RNA,



and, for example, the transformed cell expresses a recombinant form of a polypeptide or, in the case of anti-sense expression from the transferred gene, the expression of the target gene is disrupted.

As used herein, the term "transgene" means a nucleic acid sequence (or an antisense transcript thereto) which has been introduced into a cell. A transgene could be partly or entirely heterologous, i.e., foreign, to the transgenic animal or cell into which it is introduced, or, is homologous to an endogenous gene of the transgenic animal or cell into which it is introduced, but which is designed to be inserted, or is inserted, into the animal's genome in such a way as to alter the genome of the cell into which it is inserted (e.g., it is inserted at a location which differs from that of the natural gene or its insertion results in a knockout). A transgene can also be present in a cell in the form of an episome. A transgene can include one or more transcriptional regulatory sequences and any other nucleic acid, such as introns, that may be necessary for optimal expression of a selected nucleic acid.

A "transgenic animal" refers to any animal, preferably a non-human mammal, bird or an amphibian, in which one or more of the cells of the animal contain heterologous nucleic acid introduced by way of human intervention, such as by transgenic techniques well known in the art. The nucleic acid is introduced into the cell, directly or indirectly by introduction into a precursor of the cell, by way of deliberate genetic manipulation, such as by microinjection or by infection with a recombinant virus. The term genetic manipulation does not include classical cross-breeding, or *in vitro* fertilization, but rather is directed to the introduction of a recombinant DNA molecule. This molecule may be integrated within a chromosome, or it may be extra-chromosomally replicating DNA. In the typical transgenic animals described herein, the transgene causes cells to express a recombinant form of one of the subject polypeptide, e.g. either agonistic or antagonistic forms. However, transgenic animals in which the recombinant gene is silent are also contemplated, as for example, the FLP or CRE recombinase dependent constructs described below. Moreover, "transgenic animal" also includes those recombinant animals in which gene disruption of one or more genes is caused by human intervention, including both recombination and antisense techniques.

The term "treating" as used herein is intended to encompass curing as well as ameliorating at least one symptom of the condition or disease.

The term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of preferred vector is an episome, i.e., a nucleic acid capable of extra-chromosomal replication. Preferred vectors are those capable of autonomous replication and/or expression of nucleic acids to which they are linked. Vectors capable of directing the expression of genes to which they are operatively linked are referred to herein as "expression vectors". In general, expression vectors of utility in recombinant DNA techniques are often in the form of "plasmids" which refer generally to circular double stranded DNA loops which, in their vector form are not bound to the chromosome. In the present specification, "plasmid" and "vector" are used interchangeably as the plasmid is the most commonly used form of vector. However, the invention is intended to include such other forms of expression vectors which serve equivalent functions and which become known in the art subsequently hereto.

The term "wild-type allele" refers to an allele of a gene which, when present in two copies in a subject results in a wild-type phenotype. There can be several different wild-type alleles of a specific gene, since certain nucleotide changes in a gene may not affect the phenotype of a subject having two copies of the gene with the nucleotide changes.

### III. Nucleic Acids of the Present Invention

As described below, one aspect of the invention pertains to isolated nucleic acids, variants, and/or equivalents of such nucleic acids.

Nucleic acids of the present invention have been identified as differentially expressed in tumor cells, e.g., colon cancer-derived cell lines (relative to the expression levels in normal tissue, e.g., normal colon tissue and/or normal non-colon tissue), such as SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. In certain embodiments, the subject nucleic acids are differentially expressed by at least a factor of two, preferably at least a factor of five, even more preferably at least a factor of twenty, still more preferably at least a factor of fifty. Preferred nucleic acids include sequences identified as differentially expressed both in colon cancer cell tissue and colon cancer cell lines. In preferred embodiments, nucleic acids of the present invention are upregulated in tumor cells, especially colon cancer tissue and/or colon

cancer-derived cell lines. In another embodiment, nucleic acids of the present invention are downregulated in tumor cells, especially colon cancer tissue and/or colon cancer-derived cell lines.

Table 1 indicates those sequences which are over- or underexpressed in a colon cancer-derived cell line relative to normal tissue, and further designates those sequences which are also differentially regulated in colon cancer tissue. The designation O indicates that the corresponding sequence was overexpressed, M indicates possible overexpression, N indicates no differential expression, and U indicates underexpression.

Genes which are upregulated, such as oncogenes, or downregulated, such as tumor suppressors, in aberrantly proliferating cells may be targets for diagnostic or therapeutic techniques. For example, upregulation of the *cdc2* gene induces mitosis. Overexpression of the *myt1* gene, a mitotic deactivator, negatively regulates the activity of *cdc2*. Aberrant proliferation may thus be induced either by upregulating *cdc2* or by downregulating *myt1*. Similarly, downregulation of tumor suppressors such as *p53* and *Rb* have been implicated in tumorigenesis.

Particularly preferred polypeptides are those that are encoded by nucleic acid sequences at least about 70%, 75%, 80%, 90%, 95%, 97%, or 98% similar to a nucleic acid sequence of SEQ ID Nos. 1-544. Preferably, the nucleic acid includes all or a portion (e.g., at least about 12, at least about 15, at least about 25, or at least about 40 nucleotides) of the nucleotide sequence corresponding to the nucleic acid of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto.

Still other preferred nucleic acids of the present invention encode a polypeptide comprising at least a portion of a polypeptide encoded by one of SEQ ID Nos. 1-544. For example, preferred nucleic acid molecules for use as probes/primers or antisense molecules (i.e., noncoding nucleic acid molecules) can comprise at least about 12, 20, 30, 50, 60, 70, 80, 90, or 100 base pairs in length up to the length of the complete gene. Coding nucleic acid molecules can comprise, for example, from about 50, 60, 70, 80, 90, or 100 base pairs up to the length of the complete gene.

Another aspect of the invention provides a nucleic acid which hybridizes under low, medium, or high stringency conditions to a nucleic acid sequence represented by one of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. Appropriate stringency conditions which promote

DNA hybridization, for example, 6.0 x sodium chloride/sodium citrate (SSC) at about 45 °C, followed by a wash of 2.0 x SSC at 50 °C, are known to those skilled in the art or can be found in Current Protocols in Molecular Biology, John Wiley & Sons, N.Y. (1989), 6.3.1-12.3.6. For example, the salt concentration in the wash step can be  
5 selected from a low stringency of about 2.0 x SSC at 50 °C to a high stringency of about 0.2 x SSC at 50 °C. In addition, the temperature in the wash step can be increased from low stringency conditions at room temperature, about 22 °C, to high stringency conditions at about 65 °C. Both temperature and salt may be varied, or temperature or salt concentration may be held constant while the other variable is  
10 changed. In a preferred embodiment, a nucleic acid of the present invention will bind to one of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, under moderately stringent conditions, for example at about 2.0 x SSC and about 40 °C. In a particularly preferred embodiment, a nucleic acid of the present invention will bind to one of SEQ ID Nos. 1-168, preferably SEQ ID Nos.  
15 1-35, or a sequence complementary thereto, under high stringency conditions.

In one embodiment, the invention provides nucleic acids which hybridize under low stringency conditions of 6 x SSC at room temperature followed by a wash at 2 x SSC at room temperature.

In another embodiment, the invention provides nucleic acids which hybridize  
20 under high stringency conditions of 2 x SSC at 65 °C followed by a wash at 0.2 x SSC at 65 °C.

Nucleic acids having a sequence that differs from the nucleotide sequences shown in one of SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, due to degeneracy in the genetic code, are also within the  
25 scope of the invention. Such nucleic acids encode functionally equivalent peptides (i.e., a peptide having equivalent or similar biological activity) but differ in sequence from the sequence shown in the sequence listing due to degeneracy in the genetic code. For example, a number of amino acids are designated by more than one triplet. Codons that specify the same amino acid, or synonyms (for example, CAU and CAC  
30 each encode histidine) may result in "silent" mutations which do not affect the amino acid sequence of a polypeptide. However, it is expected that DNA sequence polymorphisms that do lead to changes in the amino acid sequences of the subject polypeptides will exist among mammals. One skilled in the art will appreciate that

these variations in one or more nucleotides (e.g., up to about 3-5% of the nucleotides) of the nucleic acids encoding polypeptides having an activity of a polypeptide may exist among individuals of a given species due to natural allelic variation.

Also within the scope of the invention are nucleic acids encoding splicing  
5 variants of proteins encoded by a nucleic acid of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, or natural homologs of such proteins. Such homologs can be cloned by hybridization or PCR, as further described herein.

The polynucleotide sequence may also encode for a leader sequence, e.g., the  
10 natural leader sequence or a heterologous leader sequence, for a subject polypeptide. For example, the desired DNA sequence may be fused in the same reading frame to a DNA sequence which aids in expression and secretion of the polypeptide from the host cell, for example, a leader sequence which functions as a secretory sequence for controlling transport of the polypeptide from the cell. The protein having a leader  
15 sequence is a preprotein and may have the leader sequence cleaved by the host cell to form the mature form of the protein.

The polynucleotide of the present invention may also be fused in frame to a marker sequence, also referred to herein as "Tag sequence" encoding a "Tag peptide", which allows for marking and/or purification of the polypeptide of the present  
20 invention. In a preferred embodiment, the marker sequence is a hexahistidine tag, e.g., supplied by a PQE-9 vector. Numerous other Tag peptides are available commercially. Other frequently used Tags include myc-epitopes (e.g., see Ellison et al. (1991) *J Biol Chem* 266:21150-21157) which includes a 10-residue sequence from c-myc, the pFLAG system (International Biotechnologies, Inc.), the pEZZ-protein A  
25 system (Pharmacia, NJ), and a 16 amino acid portion of the *Haemophilus influenza* hemagglutinin protein. Furthermore, any polypeptide can be used as a Tag so long as a reagent, e.g., an antibody interacting specifically with the Tag polypeptide is available or can be prepared or identified.

As indicated by the examples set out below, nucleic acids can be obtained  
30 from mRNA present in any of a number of eukaryotic cells, e.g., and are preferably obtained from metazoan cells, more preferably from vertebrate cells, and even more preferably from mammalian cells. It should also be possible to obtain nucleic acids of the present invention from genomic DNA from both adults and embryos. For

example, a gene can be cloned from either a cDNA or a genomic library in accordance with protocols generally known to persons skilled in the art. cDNA can be obtained by isolating total mRNA from a cell, e.g., a vertebrate cell, a mammalian cell, or a human cell, including embryonic cells. Double stranded cDNAs can then be prepared from  
5 the total mRNA, and subsequently inserted into a suitable plasmid or bacteriophage vector using any one of a number of known techniques. The gene can also be cloned using established polymerase chain reaction techniques in accordance with the nucleotide sequence information provided by the invention.

In certain embodiments, a nucleic acid, probe, vector, or other construct of the  
10 present invention includes at least about five, at least about ten, or at least about twenty nucleic acids from a region designated as novel in Table 2. In certain other embodiments, a nucleic acid of the present invention includes at least about five, at least about ten, or at least about twenty nucleic acids which are not included in the clones whose accession numbers are listed in Table 2.

15 The invention includes within its scope a polynucleotide having the nucleotide sequence of nucleic acid obtained from this biological material, wherein the nucleic acid hybridizes under stringent conditions (at least about 4 x SSC at 65 °C, or at least about 4 x SSC at 42 °C; see, for example, U.S. Patent No. 5,707,829, incorporated herein by reference) with at least 15 contiguous nucleotides of at least one of SEQ ID  
20 Nos. 1-544. By this is intended that when at least 15 contiguous nucleotides of one of SEQ ID Nos. 1-544 is used as a probe, the probe will preferentially hybridize with a gene or mRNA (of the biological material) comprising the complementary sequence, allowing the identification and retrieval of the nucleic acids of the biological material that uniquely hybridize to the selected probe. Probes from more than one of SEQ ID  
25 Nos. 1-544 will hybridize with the same gene or mRNA if the cDNA from which they were derived corresponds to one mRNA. Probes of more than 15 nucleotides can be used, but 15 nucleotides represents enough sequence for unique identification.

Because the present nucleic acids represent partial mRNA transcripts, two or more nucleic acids of the invention may represent different regions of the same  
30 mRNA transcript and the same gene. Thus, if two or more of SEQ ID Nos. 1-544 are identified as belonging to the same clone, then either sequence can be used to obtain the full-length mRNA or gene.

Nucleic acid-related polynucleotides can also be isolated from cDNA libraries. These libraries are preferably prepared from mRNA of human colon cells, more preferably, human colon cancer specific tissue, designated as the DE clones in the appended Tables. In another embodiment the nucleic acids are isolated from libraries  
5 prepared from normal colon specific tissue, designated herein as PA clones in the appended Tables. In yet another embodiment, this invention discloses nucleic acid sequences that can be isolated from both libraries prepared from a human colon adenocarcinoma cell line, SW480, as well as from libraries prepared from either normal colon specific tissue or from colon cancer specific tissue. These sequences are  
10 listed in Table 3. Alignment of SEQ ID Nos. 1-544, as described above, can indicate that a cell line or tissue source of a related protein or polynucleotide can also be used as a source of the nucleic acid-related cDNA.

Techniques for producing and probing nucleic acid sequence libraries are described, for example, in Sambrook *et al.*, "Molecular Cloning: A Laboratory  
15 Manual" (New York, Cold Spring Harbor Laboratory, 1989). The cDNA can be prepared by using primers based on a sequence from SEQ ID Nos. 1-544. In one embodiment, the cDNA library can be made from only poly-adenylated mRNA. Thus, poly-T primers can be used to prepare cDNA from the mRNA. Alignment of SEQ ID Nos. 1-544 can result in identification of a related polypeptide or  
20 polynucleotide. Some of the polynucleotides disclosed herein contains repetitive regions that were subject to masking during the search procedures. The information about the repetitive regions is discussed below.

Constructs of polynucleotides having sequences of SEQ ID Nos. 1-544 can be generated synthetically. Alternatively, single-step assembly of a gene and entire  
25 plasmid from large numbers of oligodeoxyribonucleotides is described by Stemmer *et al.*, *Gene (Amsterdam)* (1995) 164(1):49-53. In this method, assembly PCR (the synthesis of long DNA sequences from large numbers of oligodeoxyribonucleotides (oligos)) is described. The method is derived from DNA shuffling (Stemmer, *Nature* (1994) 370:389-391), and does not rely on DNA ligase, but instead relies on DNA  
30 polymerase to build increasingly longer DNA fragments during the assembly process. For example, a 1.1-kb fragment containing the TEM-1 beta-lactamase-encoding gene (bla) can be assembled in a single reaction from a total of 56 oligos, each 40 nucleotides (nt) in length. The synthetic gene can be PCR amplified and cloned in a

vector containing the tetracycline-resistance gene (Tc-R) as the sole selectable marker. Without relying on ampicillin (Ap) selection, 76% of the Tc-R colonies were Ap-R, making this approach a general method for the rapid and cost-effective synthesis of any gene.

5

#### IV. Identification of Functional and Structural Motifs of Novel-Genes Using Art-Recognized Methods

Translations of the nucleotide sequence of the nucleic acids, cDNAs, or full  
10 genes can be aligned with individual known sequences. Similarity with individual sequences can be used to determine the activity of the polypeptides encoded by the polynucleotides of the invention. For example, sequences that show similarity with a chemokine sequence may exhibit chemokine activities. Also, sequences exhibiting similarity with more than one individual sequence may exhibit activities that are  
15 characteristic of either or both individual sequences.

The full length sequences and fragments of the polynucleotide sequences of the nearest neighbors can be used as probes and primers to identify and isolate the full length sequence of the nucleic acid. The nearest neighbors can indicate a tissue or cell type to be used to construct a library for the full-length sequences of the nucleic acid.

20 Typically, the nucleic acids are translated in all six frames to determine the best alignment with the individual sequences. The sequences disclosed herein in the Sequence Listing are in a 5' to 3' orientation and translation in three frames can be sufficient (with a few specific exceptions as described in the Examples). These amino acid sequences are referred to, generally, as query sequences, which will be aligned  
25 with the individual sequences.

Nucleic acid sequences can be compared with known genes by any of the methods disclosed above. Results of individual and query sequence alignments can be divided into three categories: high similarity, weak similarity, and no similarity. Individual alignment results ranging from high similarity to weak similarity provide a  
30 basis for determining polypeptide activity and/or structure.

Parameters for categorizing individual results include: percentage of the alignment region length where the strongest alignment is found, percent sequence identity, and p value.



The percentage of the alignment region length is calculated by counting the number of residues of the individual sequence found in the region of strongest alignment. This number is divided by the total residue length of the query sequence to find a percentage. An example is shown below:

5

Query sequence:	ASNPERTMIPVTRVGLIRYM
Individual sequence:	YMMTEYLAIPV.RVGLPRYM
	1    5    10    15

10

The region of alignment begins at amino acid 9 and ends at amino acid 19. The total length of the query sequence is 20 amino acids. The percent of the alignment region length is 11/20 or 55%.

Percent sequence identity is calculated by counting the number of amino acid matches between the query and individual sequence and dividing total number of matches by the number of residues of the individual sequence found in the region of strongest alignment. For the example above, the percent identity would be 10 matches divided by 11 amino acids, or approximately 90.9%.

P value is the probability that the alignment was produced by chance. For a single alignment, the p value can be calculated according to Karlin *et al.*, Proc. Natl. Acad. Sci. **87**: 2264 (1990) and Karlin *et al.*, Proc. Natl. Acad. Sci. **90**: (1993). The p value of multiple alignments using the same query sequence can be calculated using an heuristic approach described in Altschul *et al.*, Nat. Genet. **6**: 119 (1994).

Alignment programs such as BLAST program can calculate the p value.

The boundaries of the region where the sequences align can be determined according to Doolittle, *Methods in Enzymology*, *supra*; BLAST or FASTA programs; or by determining the area where the sequence identity is highest.

Another factor to consider for determining identity or similarity is the location of the similarity or identity. Strong local alignment can indicate similarity even if the length of alignment is short. Sequence identity scattered throughout the length of the query sequence also can indicate a similarity between the query and profile sequences.

### High Similarity

For the alignment results to be considered high similarity, the percent of the alignment region length, typically, is at least about 55% of total length query sequence; more typically, at least about 58%; even more typically; at least about 60%  
5 of the total residue length of the query sequence. Usually, percent length of the alignment region can be as much as about 62%; more usually, as much as about 64%; even more usually, as much as about 66%.

Further, for high similarity, the region of alignment, typically, exhibits at least about 75% of sequence identity; more typically, at least about 78%; even more  
10 typically; at least about 80% sequence identity. Usually, percent sequence identity can be as much as about 82%; more usually, as much as about 84%; even more usually, as much as about 86%.

The p value is used in conjunction with these methods. If high similarity is found, the query sequence is considered to have high similarity with a profile  
15 sequence when the p value is less than or equal to about  $10^{-2}$ ; more usually; less than or equal to about  $10^{-3}$ ; even more usually; less than or equal to about  $10^{-4}$ . More typically, the p value is no more than about  $10^{-5}$ ; more typically; no more than or equal to about  $10^{-10}$ ; even more typically; no more than or equal to about  $10^{-15}$  for the query sequence to be considered high similarity.

20

### Weak Similarity

For the alignment results to be considered weak similarity, there is no minimum percent length of the alignment region nor minimum length of alignment. A better showing of weak similarity is considered when the region of alignment is,  
25 typically, at least about 15 amino acid residues in length; more typically, at least about 20; even more typically; at least about 25 amino acid residues in length. Usually, length of the alignment region can be as much as about 30 amino acid residues; more usually, as much as about 40; even more usually, as much as about 60 amino acid residues.

30 Further, for weak similarity, the region of alignment, typically, exhibits at least about 35% of sequence identity; more typically, at least about 40%; even more typically; at least about 45% sequence identity. Usually, percent sequence identity

can be as much as about 50%; more usually, as much as about 55%; even more usually, as much as about 60%.

If low similarity is found, the query sequence is considered to have weak similarity with a profile sequence when the p value is usually less than or equal to about  $10^{-2}$ ; more usually; less than or equal to about  $10^{-3}$ ; even more usually; less than or equal to about  $10^{-4}$ . More typically, the p value is no more than about  $10^{-5}$ ; more usually; no more than or equal to about  $10^{-10}$ ; even more usually; no more than or equal to about  $10^{-15}$  for the query sequence to be considered weak similarity.

#### 10 Similarity Determined by Sequence Identity

Sequence identity alone can be used to determine similarity of a query sequence to an individual sequence and can indicate the activity of the sequence. Such an alignment, preferably, permits gaps to align sequences. Typically, the query sequence is related to the profile sequence if the sequence identity over the entire query sequence is at least about 15%; more typically, at least about 20%; even more typically, at least about 25%; even more typically, at least about 50%. Sequence identity alone as a measure of similarity is most useful when the query sequence is usually, at least 80 residues in length; more usually, 90 residues; even more usually, at least 95 amino acid residues in length. More typically, similarity can be concluded based on sequence identity alone when the query sequence is preferably 100 residues in length; more preferably, 120 residues in length; even more preferably, 150 amino acid residues in length.

#### Determining Activity from Alignments with Profile and Multiple Aligned Sequences

25 Translations of the nucleic acids can be aligned with amino acid profiles that define either protein families or common motifs. Also, translations of the nucleic acids can be aligned to multiple sequence alignments (MSA) comprising the polypeptide sequences of members of protein families or motifs. Similarity or identity with profile sequences or MSAs can be used to determine the activity of the polypeptides encoded by nucleic acids or corresponding cDNA or genes. For example, sequences that show an identity or similarity with a chemokine profile or MSA can exhibit chemokine activities.

Profiles can be designed manually by (1) creating a MSA, which is an alignment of the amino acid sequence of members that belong to the family and (2) constructing

a statistical representation of the alignment. Such methods are described, for example, in Birney *et al.*, Nucl. Acid Res. 24(14): 2730-2739 (1996).

MSAs of some protein families and motifs are publicly available. For example, these include MSAs of 547 different families and motifs. These MSAs are  
5 described also in Sonnhammer *et al.*, Proteins 28: 405-420 (1997). Other sources are also available in the world wide web. A brief description of these MSAs is reported in Pascarella *et al.*, Prot. Eng. 9(3): 249-251 (1996).

Techniques for building profiles from MSAs are described in Sonnhammer *et al.*, *supra*; Birney *et al.*, *supra*; and Methods in Enzymology, vol. 266: "Computer  
10 Methods for Macromolecular Sequence Analysis," 1996, ed. Doolittle, Academic Press, Inc., a division of Harcourt Brace & Co., San Diego, California, USA.

Similarity between a query sequence and a protein family or motif can be determined by (a) comparing the query sequence against the profile and/or (b) aligning the query sequence with the members of the family or motif.

15 Typically, a program such as Searchwise can be used to compare the query sequence to the statistical representation of the multiple alignment, also known as a profile. The program is described in Birney *et al.*, *supra*. Other techniques to compare the sequence and profile are described in Sonnhammer *et al.*, *supra* and Doolittle, *supra*.

20 Next, methods described by Feng *et al.*, J. Mol. Evol. 25: 351-360 (1987) and Higgins *et al.*, CABIOS 5: 151-153 (1989) can be used align the query sequence with the members of a family or motif, also known as a MSA. Computer programs, such as PILEUP, can be used. See Feng *et al.*, *infra*.

The following factors are used to determine if a similarity between a query  
25 sequence and a profile or MSA exists: (1) number of conserved residues found in the query sequence, (2) percentage of conserved residues found in the query sequence, (3) number of frameshifts, and (4) spacing between conserved residues.

Some alignment programs that both translate and align sequences can make any number of frameshifts when translating the nucleotide sequence to produce the  
30 best alignment. The fewer frameshifts needed to produce an alignment, the stronger the similarity or identity between the query and profile or MSAs. For example, a weak similarity resulting from no frameshifts can be a better indication of activity or structure of a query sequence, than a strong similarity resulting from two frameshifts.

Preferably, three or fewer frameshifts are found in an alignment; more preferably two or fewer frameshifts; even more preferably, one or fewer frameshifts; even more preferably, no frameshifts are found in an alignment of query and profile or MSAs.

Conserved residues are those amino acids that are found at a particular  
5 position in all or some of the family or motif members. For example, most known chemokines contain four conserved cysteines. Alternatively, a position is considered conserved if only a certain class of amino acids is found in a particular position in all or some of the family members. For example, the N-terminal position may contain a positively charged amino acid, such as lysine, arginine, or histidine.

10 Typically, a residue of a polypeptide is conserved when a class of amino acids or a single amino acid is found at a particular position in at least about 40% of all class members; more typically, at least about 50%; even more typically, at least about 60% of the members. Usually, a residue is conserved when a class or single amino acid is found in at least about 70% of the members of a family or motif; more usually,  
15 at least about 80%; even more usually, at least about 90%; even more usually, at least about 95%.

A residue is considered conserved when three unrelated amino acids are found at a particular position in the some or all of the members; more usually, two unrelated amino acids. These residues are conserved when the unrelated amino acids are found  
20 at particular positions in at least about 40% of all class member; more typically, at least about 50%; even more typically, at least about 60% of the members. Usually, a residue is conserved when a class or single amino acid is found in at least about 70% of the members of a family or motif; more usually, at least about 80%; even more usually, at least about 90%; even more usually, at least about 95%.

25 A query sequence has similarity to a profile or MSA when the query sequence comprises at least about 25% of the conserved residues of the profile or MSA; more usually, at least about 30%; even more usually; at least about 40%. Typically, the query sequence has a stronger similarity to a profile sequence or MSA when the query sequence comprises at least about 45% of the conserved residues of the profile or  
30 MSA; more typically, at least about 50%; even more typically; at least about 55%.

## V. Probes and Primers

The nucleotide sequences determined from the cloning of genes from tumor cells, especially colon cancer cell lines and tissues will further allow for the generation of probes and primers designed for identifying and/or cloning homologs in other cell types, e.g., from other tissues, as well as homologs from other mammalian organisms. Nucleotide sequences useful as probes/primers may include all or a portion of the sequences listed in SEQ ID Nos. 1-544 or sequences complementary thereto or sequences which hybridize under stringent conditions to all or a portion of SEQ ID Nos. 1-544. For instance, the present invention also provides a probe/primer comprising a substantially purified oligonucleotide, which oligonucleotide comprising a nucleotide sequence that hybridizes under stringent conditions to at least approximately 12, preferably 25, more preferably 40, 50, or 75 consecutive nucleotides up to the full length of the sense or anti-sense sequence selected from the group consisting of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, or naturally occurring mutants thereof. For instance, primers based on a nucleic acid represented in SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, can be used in PCR reactions to clone homologs of that sequence.

In yet another embodiment, the invention provides probes/primers comprising a nucleotide sequence that hybridizes under moderately stringent conditions to at least approximately 12, 16, 25, 40, 50 or 75 consecutive nucleotides up to the full length of the sense or antisense sequence selected from the group consisting of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or naturally occurring mutants thereof.

In particular, these probes are useful because they provide a method for detecting mutations in wild-type genes of the present invention. Nucleic acid probes which are complementary to a wild-type gene of the present invention and can form mismatches with mutant genes are provided, allowing for detection by enzymatic or chemical cleavage or by shifts in electrophoretic mobility.

Likewise, probes based on the subject sequences can be used to detect transcripts or genomic sequences encoding the same or homologous proteins, for use, for example, in prognostic or diagnostic assays. In preferred embodiments, the probe

further comprises a label group attached thereto and able to be detected, e.g., the label group is selected from radioisotopes, fluorescent compounds, chemiluminescent compounds, enzymes, and enzyme co-factors.

Full-length cDNA molecules comprising the disclosed nucleic acids are  
5 obtained as follows. A subject nucleic acid or a portion thereof comprising at least about 12, 15, 18, or 20 nucleotides up to the full length of a sequence represented in SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, may be used as a hybridization  
10 probe to detect hybridizing members of a cDNA library using probe design methods, cloning methods, and clone selection techniques as described in U.S. Patent No. 5,654,173, "Secreted Proteins and Polynucleotides Encoding Them," incorporated herein by reference. Libraries of cDNA may be made from selected tissues, such as normal or tumor tissue, or from tissues of a mammal treated with, for example, a pharmaceutical agent. Preferably, the tissue is the same as that used to generate the  
15 nucleic acids, as both the nucleic acid and the cDNA represent expressed genes. Most preferably, the cDNA library is made from the biological material described herein in the Examples. Alternatively, many cDNA libraries are available commercially. (Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, 2nd Ed. (Cold Spring Harbor Press, Cold Spring Harbor, NY 1989). The choice of cell type for library  
20 construction may be made after the identity of the protein encoded by the nucleic acid-related gene is known. This will indicate which tissue and cell types are likely to express the related gene, thereby containing the mRNA for generating the cDNA.

Members of the library that are larger than the nucleic acid, and preferably that contain the whole sequence of the native message, may be obtained. To confirm that  
25 the entire cDNA has been obtained, RNA protection experiments may be performed as follows. Hybridization of a full-length cDNA to an mRNA may protect the RNA from RNase degradation. If the cDNA is not full length, then the portions of the mRNA that are not hybridized may be subject to RNase degradation. This may be assayed, as is known in the art, by changes in electrophoretic mobility on  
30 polyacrylamide gels, or by detection of released monoribonucleotides. Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, 2nd Ed. (Cold Spring Harbor Press, Cold Spring Harbor, NY 1989). In order to obtain additional sequences 5' to the end

of a partial cDNA, 5' RACE (PCR Protocols: A Guide to Methods and Applications (Academic Press, Inc. 1990)) may be performed.

Genomic DNA may be isolated using nucleic acids in a manner similar to the isolation of full-length cDNAs. Briefly, the nucleic acids, or portions thereof, may be  
5 used as probes to libraries of genomic DNA. Preferably, the library is obtained from the cell type that was used to generate the nucleic acids. Most preferably, the genomic DNA is obtained from the biological material described herein in the Example. Such libraries may be in vectors suitable for carrying large segments of a genome, such as P1 or YAC, as described in detail in Sambrook *et al.*, 9.4-9.30. In addition, genomic  
10 sequences can be isolated from human BAC libraries, which are commercially available from Research Genetics, Inc., Huntsville, Alabama, USA, for example. In order to obtain additional 5' or 3' sequences, chromosome walking may be performed, as described in Sambrook *et al.*, such that adjacent and overlapping fragments of genomic DNA are isolated. These may be mapped and pieced together, as is known in  
15 the art, using restriction digestion enzymes and DNA ligase.

Using the nucleic acids of the invention, corresponding full length genes can be isolated using both classical and PCR methods to construct and probe cDNA libraries. Using either method, Northern blots, preferably, may be performed on a number of cell types to determine which cell lines express the gene of interest at the  
20 highest rate.

Classical methods of constructing cDNA libraries are taught in Sambrook *et al.*, supra. With these methods, cDNA can be produced from mRNA and inserted into viral or expression vectors. Typically, libraries of mRNA comprising poly(A) tails can be produced with poly(T) primers. Similarly, cDNA libraries can be produced using  
25 the instant sequences as primers.

PCR methods may be used to amplify the members of a cDNA library that comprise the desired insert. In this case, the desired insert may contain sequence from the full length cDNA that corresponds to the instant nucleic acids. Such PCR methods include gene trapping and RACE methods.

Gene trapping may entail inserting a member of a cDNA library into a vector. The vector then may be denatured to produce single stranded molecules. Next, a substrate-bound probe, such a biotinylated oligo, may be used to trap cDNA inserts of  
30 interest. Biotinylated probes can be linked to an avidin-bound solid substrate. PCR



methods can be used to amplify the trapped cDNA. To trap sequences corresponding to the full length genes, the labeled probe sequence may be based on the nucleic acids of the invention, e.g., SEQ ID Nos. 1-168, preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. Random primers or primers specific to the library  
5 vector can be used to amplify the trapped cDNA. Such gene trapping techniques are described in Gruber *et al.*, PCT WO 95/04745 and Gruber *et al.*, U.S. Pat. No. 5,500,356. Kits are commercially available to perform gene trapping experiments from, for example, Life Technologies, Gaithersburg, Maryland, USA.

“Rapid amplification of cDNA ends,” or RACE, is a PCR method of  
10 amplifying cDNAs from a number of different RNAs. The cDNAs may be ligated to an oligonucleotide linker and amplified by PCR using two primers. One primer may be based on sequence from the instant nucleic acids, for which full length sequence is desired, and a second primer may comprise a sequence that hybridizes to the oligonucleotide linker to amplify the cDNA. A description of this method is reported  
15 in PCT Pub. No. WO 97/19110.

In preferred embodiments of RACE, a common primer may be designed to anneal to an arbitrary adaptor sequence ligated to cDNA ends (Apte and Siebert, Biotechniques 15:890-893, 1993; Edwards *et al.*, Nuc. Acids Res. 19:5227-5232, 1991). When a single gene-specific RACE primer is paired with the common primer,  
20 preferential amplification of sequences between the single gene specific primer and the common primer occurs. Commercial cDNA pools modified for use in RACE are available.

Another PCR-based method generates full-length cDNA library with anchored ends without specific knowledge of the cDNA sequence. The method uses lock-  
25 docking primers (I-VI), where one primer, poly TV (I-III) locks over the polyA tail of eukaryotic mRNA producing first strand synthesis and a second primer, polyGH (IV-VI) locks onto the polyC tail added by terminal deoxynucleotidyl transferase (TdT). This method is described in PCT Pub. No. WO 96/40998.

The promoter region of a gene generally is located 5' to the initiation site for  
30 RNA polymerase II. Hundreds of promoter regions contain the “TATA” box, a sequence such as TATTA or TATAA, which is sensitive to mutations. The promoter region can be obtained by performing 5' RACE using a primer from the coding region

of the gene. Alternatively, the cDNA can be used as a probe for the genomic sequence, and the region 5' to the coding region is identified by "walking up."

If the gene is highly expressed or differentially expressed, the promoter from the gene may be of use in a regulatory construct for a heterologous gene.

5        Once the full-length cDNA or gene is obtained, DNA encoding variants can be prepared by site-directed mutagenesis, described in detail in Sambrook *et al.*, 15.3-15.63. The choice of codon or nucleotide to be replaced can be based on the disclosure herein on optional changes in amino acids to achieve altered protein structure and/or function.

10        As an alternative method to obtaining DNA or RNA from a biological material, nucleic acid comprising nucleotides having the sequence of one or more nucleic acids of the invention can be synthesized. Thus, the invention encompasses nucleic acid molecules ranging in length from 12 nucleotides (corresponding to at least 12 contiguous nucleotides which hybridize under stringent conditions to or are at  
15        least 80% identical to a nucleic acid represented by one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto) up to a maximum length suitable for one or more biological manipulations, including replication and expression, of the nucleic acid molecule. The invention includes but is not limited to (a) nucleic acid having the size  
20        of a full gene, and comprising at least one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto; (b) the nucleic acid of (a) also comprising at least one additional gene, operably linked to permit expression of a fusion protein; (c) an expression vector comprising (a) or (b); (d) a plasmid comprising (a) or (b); and (e) a recombinant viral  
25        particle comprising (a) or (b). Construction of (a) can be accomplished as described below in part IV.

      The sequence of a nucleic acid of the present invention is not limited and can be any sequence of A, T, G, and/or C (for DNA) and A, U, G, and/or C (for RNA) or modified bases thereof, including inosine and pseudouridine. The choice of sequence  
30        will depend on the desired function and can be dictated by coding regions desired, the intron-like regions desired, and the regulatory regions desired.

#### VI. Vectors Carrying Nucleic Acids of the Present Invention

The invention further provides plasmids and vectors, which can be used to express a gene in a host cell. The host cell may be any prokaryotic or eukaryotic cell. Thus, a nucleotide sequence derived from any one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence  
5 complementary thereto, encoding all or a selected portion of a protein, can be used to produce a recombinant form of an polypeptide via microbial or eukaryotic cellular processes. Ligating the polynucleotide sequence into a gene construct, such as an expression vector, and transforming or transfecting into hosts, either eukaryotic (yeast, avian, insect or mammalian) or prokaryotic (bacterial cells), are standard  
10 procedures well known in the art.

Vectors that allow expression of a nucleic acid in a cell are referred to as expression vectors. Typically, expression vectors contain a nucleic acid operably linked to at least one transcriptional regulatory sequence. Regulatory sequences are art-recognized and are selected to direct expression of the subject nucleic acids.  
15 Transcriptional regulatory sequences are described in Goeddel; Gene Expression Technology: Methods in Enzymology 185, Academic Press, San Diego, CA (1990). In one embodiment, the expression vector includes a recombinant gene encoding a peptide having an agonistic activity of a subject polypeptide, or alternatively, encoding a peptide which is an antagonistic form of a subject polypeptide.

20 The choice of plasmid will depend on the type of cell in which propagation is desired and the purpose of propagation. Certain vectors are useful for amplifying and making large amounts of the desired DNA sequence. Other vectors are suitable for expression in cells in culture. Still other vectors are suitable for transfer and expression in cells in a whole animal or person. The choice of appropriate vector is  
25 well within the skill of the art. Many such vectors are available commercially. The nucleic acid or full-length gene is inserted into a vector typically by means of DNA ligase attachment to a cleaved restriction enzyme site in the vector. Alternatively, the desired nucleotide sequence may be inserted by homologous recombination in vivo. Typically this is accomplished by attaching regions of homology to the vector on the  
30 flanks of the desired nucleotide sequence. Regions of homology are added by ligation of oligonucleotides, or by polymerase chain reaction using primers comprising both the region of homology and a portion of the desired nucleotide sequence.

Nucleic acids or full-length genes are linked to regulatory sequences as appropriate to obtain the desired expression properties. These may include promoters (attached either at the 5' end of the sense strand or at the 3' end of the antisense strand), enhancers, terminators, operators, repressors, and inducers. The promoters  
5 may be regulated or constitutive. In some situations it may be desirable to use conditionally active promoters, such as tissue-specific or developmental stage-specific promoters. These are linked to the desired nucleotide sequence using the techniques described above for linkage to vectors. Any techniques known in the art may be used.

When any of the above host cells, or other appropriate host cells or organisms,  
10 are used to replicate and/or express the polynucleotides or nucleic acids of the invention, the resulting replicated nucleic acid, RNA, expressed protein or polypeptide, is within the scope of the invention as a product of the host cell or organism. The product is recovered by any appropriate means known in the art.

Once the gene corresponding to the nucleic acid is identified, its expression  
15 can be regulated in the cell to which the gene is native. For example, an endogenous gene of a cell can be regulated by an exogenous regulatory sequence as disclosed in U.S. Patent No. 5,641,670, "Protein Production and Protein Delivery."

A number of vectors exist for the expression of recombinant proteins in yeast (see, for example, Broach *et al.* (1983) in *Experimental Manipulation of Gene*  
20 *Expression*, ed. M. Inouye, Academic Press, p. 83, incorporated by reference herein). In addition, drug resistance markers such as ampicillin can be used. In an illustrative embodiment, a polypeptide is produced recombinantly utilizing an expression vector generated by sub-cloning one of the nucleic acids represented in one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a  
25 sequence complementary thereto.

The preferred mammalian expression vectors contain both prokaryotic sequences, to facilitate the propagation of the vector in bacteria, and one or more eukaryotic transcription units that are expressed in eukaryotic cells. The various methods employed in the preparation of plasmids and transformation of host  
30 organisms are well known in the art. For other suitable expression systems for both prokaryotic and eukaryotic cells, as well as general recombinant procedures, see *Molecular Cloning: A Laboratory Manual*, 2<sup>nd</sup> Ed., ed. by Sambrook, Fritsch and Maniatis (Cold Spring Harbor Laboratory Press: 1989) Chapters 16 and 17.

When it is desirable to express only a portion of a gene, e.g., a truncation mutant, it may be necessary to add a start codon (ATG) to the oligonucleotide fragment containing the desired sequence to be expressed. It is well known in the art that a methionine at the N-terminal position can be enzymatically cleaved by the use of the enzyme methionine aminopeptidase (MAP). MAP has been cloned from *E. coli* (Ben-Bassat *et al.* (1987) *J. Bacteriol.* 169:751-757) and *Salmonella typhimurium* and its *in vitro* activity has been demonstrated on recombinant proteins (Miller *et al.* (1987) *PNAS* 84:2718-1722). Therefore, removal of an N-terminal methionine, if desired, can be achieved either *in vivo* by expressing polypeptides in a host which produces MAP (e.g., *E. coli* or CM89 or *S. cerevisiae*), or *in vitro* by use of purified MAP (e.g., procedure of Miller *et al.*, *supra*).

Moreover, the nucleic acid constructs of the present invention can also be used as part of a gene therapy protocol to deliver nucleic acids such as antisense nucleic acids. Thus, another aspect of the invention features expression vectors for *in vivo* or *in vitro* transfection with an antisense oligonucleotide.

In addition to viral transfer methods, non-viral methods can also be employed to introduce a subject nucleic acid, e.g., a sequence represented by one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, into the tissue of an animal. Most nonviral methods of gene transfer rely on normal mechanisms used by mammalian cells for the uptake and intracellular transport of macromolecules. In preferred embodiments, non-viral targeting means of the present invention rely on endocytic pathways for the uptake of the subject nucleic acid by the targeted cell. Exemplary targeting means of this type include liposomal derived systems, polylysine conjugates, and artificial viral envelopes.

A nucleic acid of any of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, the corresponding cDNA, or the full-length gene may be used to express the partial or complete gene product. Appropriate nucleic acid constructs are purified using standard recombinant DNA techniques as described in, for example, Sambrook *et al.*, (1989) *Molecular Cloning: A Laboratory Manual*, 2nd ed. (Cold Spring Harbor Press, Cold Spring Harbor, New York), and under current regulations described in United States Dept. of HHS, National Institute of Health (NIH) Guidelines for Recombinant

DNA Research. The polypeptides encoded by the nucleic acid may be expressed in any expression system, including, for example, bacterial, yeast, insect, amphibian and mammalian systems. Suitable vectors and host cells are described in U.S. Patent No. 5,654,173.

5        Bacteria. Expression systems in bacteria include those described in Chang *et al.*, *Nature* (1978) 275:615, Goeddel *et al.*, *Nature* (1979) 281:544; Goeddel *et al.*, *Nucleic Acids Res.* (1980) 8:4057; EP 0 036,776, U.S. Patent No. 4,551,433, DeBoer *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1983) 80:2125, and Siebenlist *et al.*, *Cell* (1980) 20:269.

10        Yeast. Expression systems in yeast include those described in Hinnen *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1978) 75:1929; Ito *et al.*, *J. Bacteriol.* (1983) 153:163; Kurtz *et al.*, *Mol. Cell. Biol.* (1986) 6:142; Kunze *et al.*, *J. Basic Microbiol.* (1985) 25:141; Gleeson *et al.*, *J. Gen. Microbiol.* (1986) 132:3459, Roggenkamp *et al.*, *Mol. Gen. Genet.* (1986) 202:302) Das *et al.*, *J. Bacteriol.* (1984) 158:1165; De  
15        Louvencourt *et al.*, *J. Bacteriol.* (1983) 154:737, Van den Berg *et al.*, *Bio/Technology* (1990) 8:135; Kunze *et al.*, *J. Basic Microbiol.* (1985) 25:141; Cregg *et al.*, *Mol. Cell. Biol.* (1985) 5:3376, U.S. Patent Nos. 4,837,148 and 4,929,555; Beach and Nurse, *Nature* (1981) 300:706; Davidow *et al.*, *Curr. Genet.* (1985) 10:380, Gaillardin *et al.*, *Curr. Genet.* (1985) 10:49, Ballance *et al.*, *Biochem. Biophys. Res. Commun.* (1983)  
20        112:284289; Tilburn *et al.*, *Gene* (1983) 26:205221, Yelton *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1984) 81:14701474, Kelly and Hynes, *EMBO J.* (1985) 4:475479; EP 0 244,234, and WO 91/00357.

Insect Cells. Expression of heterologous genes in insects is accomplished as described in U.S. Patent No. 4,745,051, Friesen *et al.* (1986) "The Regulation of  
25        Baculovirus Gene Expression" in: The Molecular Biology Of Baculoviruses (W. Doerfler, ed.), EP 0 127,839, EP 0 155,476, and Vlak *et al.*, *J. Gen. Virol.* (1988) 69:765776, Miller *et al.*, *Ann. Rev. Microbiol.* (1988) 42:177, Carbonell *et al.*, *Gene* (1988) 73:409, Maeda *et al.*, *Nature* (1985) 315:592594, LebacqVerheyden *et al.*, *Mol. Cell. Biol.* (1988) 8:3129; Smith *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1985)  
30        82:8404, Miyajima *et al.*, *Gene* (1987) 58:273; and Martin *et al.*, *DNA* (1988) 7:99. Numerous baculoviral strains and variants and corresponding permissive insect host cells from hosts are described in Luckow *et al.*, *Bio/Technology* (1988) 6:4755, Miller

*et al.*, Generic Engineering (Setlow, J.K. *et al.* eds.), Vol. 8 (Plenum Publishing, 1986), pp. 277279, and Maeda *et al.*, *Nature*, (1985) 315:592-594.

Mammalian Cells. Mammalian expression is accomplished as described in Dijkema *et al.*, *EMBO J.* (1985) 4:761, Gorman *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1982) 79:6777, Boshart *et al.*, *Cell* (1985) 41:521 and U.S. Patent No. 4,399,216. Other features of mammalian expression are facilitated as described in Ham and Wallace, *Meth. Enz.* (1979) 58:44, Barnes and Sato, *Anal. Biochem.* (1980) 102:255, U.S. Patent Nos. 4,767,704, 4,657,866, 4,927,762, 4,560,655, WO 90/103430, WO 87/00195, and U.S. RE 30,985.

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#### VII. Therapeutic Nucleic Acid Constructs

One aspect of the invention relates to the use of the isolated nucleic acid, e.g., SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, in antisense therapy. As used herein, antisense therapy refers to administration or *in situ* generation of oligonucleotide molecules or their derivatives which specifically hybridize (e.g., bind) under cellular conditions with the cellular mRNA and/or genomic DNA, thereby inhibiting transcription and/or translation of that gene. The binding may be by conventional base pair complementarity, or, for example, in the case of binding to DNA duplexes, through specific interactions in the major groove of the double helix. In general, antisense therapy refers to the range of techniques generally employed in the art, and includes any therapy which relies on specific binding to oligonucleotide sequences.

An antisense construct of the present invention can be delivered, for example, as an expression plasmid which, when transcribed in the cell, produces RNA which is complementary to at least a unique portion of the cellular mRNA. Alternatively, the antisense construct is an oligonucleotide probe which is generated *ex vivo* and which, when introduced into the cell, causes inhibition of expression by hybridizing with the mRNA and/or genomic sequences of a subject nucleic acid. Such oligonucleotide probes are preferably modified oligonucleotides which are resistant to endogenous nucleases, e.g., exonucleases and/or endonucleases, and are therefore stable *in vivo*. Exemplary nucleic acid molecules for use as antisense oligonucleotides are phosphoramidate, phosphorothioate and methylphosphonate analogs of DNA (see also

U.S. Patents 5,176,996; 5,264,564; and 5,256,775). Additionally, general approaches to constructing oligomers useful in antisense therapy have been reviewed, for example, by Van der Krol et al. (1988) *BioTechniques* 6:958-976; and Stein et al. (1988) *Cancer Res* 48:2659-2668. With respect to antisense DNA,

- 5 oligodeoxyribonucleotides derived from the translation initiation site, e.g., between the -10 and +10 regions of the nucleotide sequence of interest, are preferred.

Antisense approaches involve the design of oligonucleotides (either DNA or RNA) that are complementary to mRNA. The antisense oligonucleotides will bind to the mRNA transcripts and prevent translation. Absolute complementarity, although  
10 preferred, is not required. In the case of double-stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the longer the hybridizing nucleic acid, the more base mismatches with an RNA it may contain and still form a  
15 stable duplex (or triplex, as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

Oligonucleotides that are complementary to the 5' "end of the mRNA, e.g., the 5' untranslated sequence up to and including the AUG initiation codon, should work  
20 most efficiently at inhibiting translation. However, sequences complementary to the 3' untranslated sequences of mRNAs have recently been shown to be effective at inhibiting translation of mRNAs as well. (Wagner, R. 1994. *Nature* 372:333). Therefore, oligonucleotides complementary to either the 5' or 3' untranslated, non-coding regions of a gene could be used in an antisense approach to inhibit translation  
25 of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are typically less efficient inhibitors of translation but could also be used in accordance with the invention. Whether designed to hybridize to the 5', 3', or coding region of subject mRNA,  
30 antisense nucleic acids should be at least six nucleotides in length, and are preferably less than about 100 and more preferably less than about 50, 25, 17 or 10 nucleotides in length.



Regardless of the choice of target sequence, it is preferred that *in vitro* studies are first performed to quantitate the ability of the antisense oligonucleotide to quantitate the ability of the antisense oligonucleotide to inhibit gene expression. It is preferred that these studies utilize controls that distinguish between antisense gene inhibition and nonspecific biological effects of oligonucleotides. It is also preferred that these studies compare levels of the target RNA or protein with that of an internal control RNA or protein. Additionally, it is envisioned that results obtained using the antisense oligonucleotide are compared with those obtained using a control oligonucleotide. It is preferred that the control oligonucleotide is of approximately the same length as the test oligonucleotide and that the nucleotide sequence of the oligonucleotide differs from the antisense sequence no more than is necessary to prevent specific hybridization to the target sequence.

The oligonucleotides can be DNA or RNA or chimeric mixtures or derivatives or modified versions thereof, single-stranded or double-stranded. The oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, Proc. Natl. Acad. Sci. U.S.A. 86:6553-6556; Lemaitre et al., 1987, Proc. Natl. Acad. Sci. 84:648-652; PCT Publication No. WO 88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO 89/10134, published April 25, 1988), hybridization-triggered cleavage agents (See, e.g., Krol et al., 1988, BioTechniques 6:958-976), or intercalating agents (See, e.g., Zon, 1988, Pharm. Res. 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including but not limited to 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxytriethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine,

7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-  
5 thiouracil, 5-methyluracil, uracil-5- oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including but not limited to arabinose, 2-  
10 fluoroarabinose, xylulose, and hexose.

The antisense oligonucleotide can also contain a neutral peptide-like backbone. Such molecules are termed peptide nucleic acid (PNA)-oligomers and are described, e.g., in Perry- O'Keefe et al. (1996) Proc. Natl. Acad. Sci. U.S.A. 93:14670 and in Eglom *et al.* (1993) Nature 365:566. One advantage of PNA oligomers is their  
15 capability to bind to complementary DNA essentially independently from the ionic strength of the medium due to the neutral backbone of the DNA. In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group consisting of a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a phosphoramidate, a  
20 phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

In yet a further embodiment, the antisense oligonucleotide is an  $\alpha$ -anomeric oligonucleotide. An  $\alpha$ -anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual  $\beta$ -units, the strands  
25 run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-O-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-12148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

Oligonucleotides of the invention may be synthesized by standard methods  
30 known in the art, e.g., by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be

prepared by use of controlled pore glass polymer supports (Sarin et al., 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

While antisense nucleotides complementary to a coding region sequence can be used, those complementary to the transcribed untranslated region and to the region  
5 comprising the initiating methionine are most preferred.

The antisense molecules can be delivered to cells which express the target nucleic acid *in vivo*. A number of methods have been developed for delivering antisense DNA or RNA to cells; e.g., antisense molecules can be injected directly into the tissue site, or modified antisense molecules, designed to target the desired cells  
10 (e.g., antisense linked to peptides or antibodies that specifically bind receptors or antigens expressed on the target cell surface) can be administered systemically.

However, it is often difficult to achieve intracellular concentrations of the antisense sufficient to suppress translation on endogenous mRNAs. Therefore, a preferred approach utilizes a recombinant DNA construct in which the antisense  
15 oligonucleotide is placed under the control of a strong pol III or pol II promoter. The use of such a construct to transfect target cells in the patient will result in the transcription of sufficient amounts of single stranded RNAs that will form complementary base pairs with the endogenous transcripts and thereby prevent translation of the target mRNA. For example, a vector can be introduced *in vivo* such  
20 that it is taken up by a cell and directs the transcription of an antisense RNA. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art for replication and expression in mammalian cells.  
25 Expression of the sequence encoding the antisense RNA can be by any promoter known in the art to act in mammalian, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include but are not limited to: the SV40 early promoter region (Bernoist and Chambon, 1981, Nature 290:304-310), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto  
30 *et al.*, 1980, Cell 22:787-797), the herpes thymidine kinase promoter (Wagner et al., 1981, Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445), the regulatory sequences of the metallothionein gene (Brinster et al, 1982, Nature 296:39-42), etc. Any type of plasmid, cosmid, YAC or viral vector can be used to prepare the recombinant DNA

construct which can be introduced directly into the tissue site; e.g., the choroid plexus or hypothalamus. Alternatively, viral vectors can be used which selectively infect the desired tissue (e.g., for brain, herpesvirus vectors may be used), in which case administration may be accomplished by another route (e.g., systemically).

5           In another aspect of the invention, ribozyme molecules designed to catalytically cleave target mRNA transcripts can be used to prevent translation of target mRNA and expression of a target protein (See, e.g., PCT International Publication WO90/11364, published October 4, 1990; Sarver *et al.*, 1990, Science 247:1222-1225 and U.S. Patent No. 5,093,246). While ribozymes that cleave mRNA  
10   at site specific recognition sequences can be used to destroy target mRNAs, the use of hammerhead ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of hammerhead  
15   ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, 1988, Nature, 334:585-591. Preferably the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the target mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA transcripts.

20           The ribozymes of the present invention also include RNA endoribonucleases (hereinafter "Cech-type ribozymes") such as the one which occurs naturally in *Tetrahymena thermophila* (known as the IVS, or L-19 IVS RNA) and which has been extensively described by Thomas Cech and collaborators (Zaug, et al., 1984, Science, 224:574-578; Zaug and Cech, 1986, Science, 231:470-475; Zaug, et al., 1986, Nature,  
25   324:429-433; published International patent application No. WO88/04300 by University Patents Inc.; Been and Cech, 1986, Cell, 47:207-216). The Cech-type ribozymes have an eight base pair active site which hybridizes to a target RNA sequence whereafter cleavage of the target RNA takes place. The invention encompasses those Cech-type ribozymes which target eight base-pair active site  
30   sequences that are present in a target gene.

As in the antisense approach, the ribozymes can be composed of modified oligonucleotides (e.g., for improved stability, targeting, etc.) and should be delivered to cells which express the target gene *in vivo*. A preferred method of delivery

involves using a DNA construct "encoding" the ribozyme under the control of a strong constitutive pol III or pol II promoter, so that transfected cells will produce sufficient quantities of the ribozyme to destroy endogenous messages and inhibit translation. Because ribozymes, unlike antisense molecules, are catalytic, a lower  
5 intracellular concentration is required for efficiency.

Antisense RNA, DNA, and ribozyme molecules of the invention may be prepared by any method known in the art for the synthesis of DNA and RNA molecules. These include techniques for chemically synthesizing oligodeoxyribonucleotides and oligoribonucleotides well known in the art such as for  
10 example solid phase phosphoramidite chemical synthesis. Alternatively, RNA molecules may be generated by *in vitro* and *in vivo* transcription of DNA sequences encoding the antisense RNA molecule. Such DNA sequences may be incorporated into a wide variety of vectors which incorporate suitable RNA polymerase promoters such as the T7 or SP6 polymerase promoters. Alternatively, antisense cDNA  
15 constructs that synthesize antisense RNA constitutively or inducibly, depending on the promoter used, can be introduced stably into cell lines.

Moreover, various well-known modifications to nucleic acid molecules may be introduced as a means of increasing intracellular stability and half-life. Possible modifications include but are not limited to the addition of flanking sequences of  
20 ribonucleotides or deoxyribonucleotides to the 5' and/or 3' ends of the molecule or the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages within the oligodeoxyribonucleotide backbone.

#### VIII. Polypeptides of the Present Invention

25 The present invention makes available isolated polypeptides which are isolated from, or otherwise substantially free of other cellular proteins, especially other signal transduction factors and/or transcription factors which may normally be associated with the polypeptide. Subject polypeptides of the present invention include polypeptides encoded by the nucleic acids of SEQ ID Nos. 1-544, preferably SEQ ID  
30 Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, or polypeptides encoded by genes of which a sequence in SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, is a fragment. Polypeptides of the present invention

include those proteins which are differentially regulated in tumor cells, especially colon cancer-derived cell lines (relative to normal cells, e.g., normal colon tissue and non-colon tissue). In preferred embodiments, the polypeptides are upregulated in tumor cells, especially colon cancer cancer-derived cell lines. In other embodiments, the polypeptides are downregulated in tumor cells, especially colon cancer-derived cell lines. Proteins which are upregulated, such as oncogenes, or downregulated, such as tumor suppressors, in aberrantly proliferating cells may be targets for diagnostic or therapeutic techniques. For example, upregulation of the *cdc2* gene induces mitosis. Overexpression of the *myt1* gene, a mitotic deactivator, negatively regulates the activity of *cdc2*. Aberrant proliferation may thus be induced either by upregulating *cdc2* or by downregulating *myt1*.

The term "substantially free of other cellular proteins" (also referred to herein as "contaminating proteins") or "substantially pure or purified preparations" are defined as encompassing preparations of polypeptides having less than about 20% (by dry weight) contaminating protein, and preferably having less than about 5% contaminating protein. Functional forms of the subject polypeptides can be prepared, for the first time, as purified preparations by using a cloned nucleic acid as described herein. Full length proteins or fragments corresponding to one or more particular motifs and/or domains or to arbitrary sizes, for example, at least about 5, 10, 25, 50, 75, or 100 amino acids in length are within the scope of the present invention.

For example, isolated polypeptides can be encoded by all or a portion of a nucleic acid sequence shown in any of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. Isolated peptidyl portions of proteins can be obtained by screening peptides recombinantly produced from the corresponding fragment of the nucleic acid encoding such peptides. In addition, fragments can be chemically synthesized using techniques known in the art such as conventional Merrifield solid phase f-Moc or t-Boc chemistry. For example, a polypeptide of the present invention may be arbitrarily divided into fragments of desired length with no overlap of the fragments, or preferably divided into overlapping fragments of a desired length. The fragments can be produced (recombinantly or by chemical synthesis) and tested to identify those peptidyl fragments which can function as either agonists or antagonists of a wild-type (e.g., "authentic") protein.

Another aspect of the present invention concerns recombinant forms of the subject proteins. Recombinant polypeptides preferred by the present invention, in addition to native proteins, as described above are encoded by a nucleic acid, which is at least 60%, more preferably at least 80%, and more preferably 85%, and more  
5 preferably 90%, and more preferably 95% identical to an amino acid sequence encoded by SEQ ID Nos. 1-544. Polypeptides which are encoded by a nucleic acid that is at least about 98-99% identical with the sequence of SEQ ID Nos. 1-544 are also within the scope of the invention. Also included in the present invention are peptide fragments comprising at least a portion of such a protein.

10 In a preferred embodiment, a polypeptide of the present invention is a mammalian polypeptide and even more preferably a human polypeptide. In particularly preferred embodiment, the polypeptide retains wild-type bioactivity. It will be understood that certain post-translational modifications, e.g., phosphorylation and the like, can increase the apparent molecular weight of the polypeptide relative to  
15 the unmodified polypeptide chain.

The present invention further pertains to recombinant forms of one of the subject polypeptides. Such recombinant polypeptides preferably are capable of functioning in one of either role of an agonist or antagonist of at least one biological activity of a wild-type ("authentic") polypeptide of the appended sequence listing. The  
20 term "evolutionarily related to", with respect to amino acid sequences of proteins, refers to both polypeptides having amino acid sequences which have arisen naturally, and also to mutational variants of human polypeptides which are derived, for example, by combinatorial mutagenesis.

In general, polypeptides referred to herein as having an activity (e.g., are  
25 "bioactive") of a protein are defined as polypeptides which include an amino acid sequence encoded by all or a portion of the nucleic acid sequences shown in one of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, and which mimic or antagonize all or a portion of the biological/biochemical activities of a naturally occurring protein.  
30 According to the present invention, a polypeptide has biological activity if it is a specific agonist or antagonist of a naturally occurring form of a protein.

Assays for determining whether a compound, e.g, a protein or variant thereof, has one or more of the above biological activities are well known in the art. In certain

embodiments, the polypeptides of the present invention have activities such as those outlined above.

In another embodiment, the coding sequences for the polypeptide can be incorporated as a part of a fusion gene including a nucleotide sequence encoding a different polypeptide. This type of expression system can be useful under conditions where it is desirable to produce an immunogenic fragment of a polypeptide (see, for example, EP Publication No: 0259149; and Evans *et al.* (1989) *Nature* 339:385; Huang *et al.* (1988) *J. Virol.* 62:3855; and Schlienger *et al.* (1992) *J. Virol.* 66:2). In addition to utilizing fusion proteins to enhance immunogenicity, it is widely appreciated that fusion proteins can also facilitate the expression of proteins, and, accordingly, can be used in the expression of the polypeptides of the present invention (see, for example, *Current Protocols in Molecular Biology*, eds. Ausubel *et al.* (N.Y.: John Wiley & Sons, 1991)). In another embodiment, a fusion gene coding for a purification leader sequence, such as a poly-(His)/enterokinase cleavage site sequence at the N-terminus of the desired portion of the recombinant protein, can allow purification of the expressed fusion protein by affinity chromatography using a Ni<sup>2+</sup> metal resin. The purification leader sequence can then be subsequently removed by treatment with enterokinase to provide the purified protein (e.g., see Hochuli *et al.* (1987) *J. Chromatography* 411:177; and Janknecht *et al.* *PNAS* 88:8972).

Techniques for making fusion genes are known to those skilled in the art. Essentially, the joining of various DNA fragments coding for different polypeptide sequences is performed in accordance with conventional techniques, employing blunt-ended or stagger-ended termini for ligation, restriction enzyme digestion to provide for appropriate termini, filling-in of cohesive ends as appropriate, alkaline phosphatase treatment to avoid undesirable joining, and enzymatic ligation. In another embodiment, the fusion gene can be synthesized by conventional techniques including automated DNA synthesizers. Alternatively, PCR amplification of nucleic acid fragments can be carried out using anchor primers which give rise to complementary overhangs between two consecutive nucleic acid fragments which can subsequently be annealed to generate a chimeric nucleic acid sequence (see, for example, *Current Protocols in Molecular Biology*, eds. Ausubel *et al.* John Wiley & Sons: 1992).

The present invention further pertains to methods of producing the subject polypeptides. For example, a host cell transfected with a nucleic acid vector directing



expression of a nucleotide sequence encoding the subject polypeptides can be cultured under appropriate conditions to allow expression of the peptide to occur. Suitable media for cell culture are well known in the art. The recombinant polypeptide can be isolated from cell culture medium, host cells, or both using techniques known in the art for purifying proteins including ion-exchange chromatography, gel filtration chromatography, ultrafiltration, electrophoresis, and immunoaffinity purification with antibodies specific for such peptide. In a preferred embodiment, the recombinant polypeptide is a fusion protein containing a domain which facilitates its purification, such as GST fusion protein.

Moreover, it will be generally appreciated that, under certain circumstances, it may be advantageous to provide homologs of one of the subject polypeptides which function in a limited capacity as one of either an agonist (mimetic) or an antagonist, in order to promote or inhibit only a subset of the biological activities of the naturally occurring form of the protein. Thus, specific biological effects can be elicited by treatment with a homolog of limited function, and with fewer side effects relative to treatment with agonists or antagonists which are directed to all of the biological activities of naturally occurring forms of subject proteins.

Homologs of each of the subject polypeptide can be generated by mutagenesis, such as by discrete point mutation(s), or by truncation. For instance, mutation can give rise to homologs which retain substantially the same, or merely a subset, of the biological activity of the polypeptide from which it was derived. Alternatively, antagonistic forms of the polypeptide can be generated which are able to inhibit the function of the naturally occurring form of the protein, such as by competitively binding to a receptor.

The recombinant polypeptides of the present invention also include homologs of the wild-type proteins, such as versions of those proteins which are resistant to proteolytic cleavage, for example, due to mutations which alter ubiquitination or other enzymatic targeting associated with the protein.

Polypeptides may also be chemically modified to create derivatives by forming covalent or aggregate conjugates with other chemical moieties, such as glycosyl groups, lipids, phosphate, acetyl groups and the like. Covalent derivatives of proteins can be prepared by linking the chemical moieties to functional groups on

amino acid sidechains of the protein or at the N-terminus or at the C-terminus of the polypeptide.

Modification of the structure of the subject polypeptides can be for such purposes as enhancing therapeutic or prophylactic efficacy, stability (e.g., *ex vivo* shelf life and resistance to proteolytic degradation), or post-translational modifications (e.g., to alter phosphorylation pattern of protein). Such modified peptides, when designed to retain at least one activity of the naturally occurring form of the protein, or to produce specific antagonists thereof, are considered functional equivalents of the polypeptides described in more detail herein. Such modified peptides can be produced, for instance, by amino acid substitution, deletion, or addition. The substitutional variant may be a substituted conserved amino acid or a substituted non-conserved amino acid.

For example, it is reasonable to expect that an isolated replacement of a leucine with an isoleucine or valine, an aspartate with a glutamate, a threonine with a serine, or a similar replacement of an amino acid with a structurally related amino acid (i.e., isosteric and/or isoelectric mutations) will not have a major effect on the biological activity of the resulting molecule. Conservative replacements are those that take place within a family of amino acids that are related in their side chains. Genetically encoded amino acids can be divided into four families: (1) acidic = aspartate, glutamate; (2) basic = lysine, arginine, histidine; (3) nonpolar = alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, tryptophan; and (4) uncharged polar = glycine, asparagine, glutamine, cysteine, serine, threonine, tyrosine. In similar fashion, the amino acid repertoire can be grouped as (1) acidic = aspartate, glutamate; (2) basic = lysine, arginine histidine, (3) aliphatic = glycine, alanine, valine, leucine, isoleucine, serine, threonine, with serine and threonine optionally be grouped separately as aliphatic-hydroxyl; (4) aromatic = phenylalanine, tyrosine, tryptophan; (5) amide = asparagine, glutamine; and (6) sulfur -containing = cysteine and methionine. (see, for example, Biochemistry, 2<sup>nd</sup> ed., Ed. by L. Stryer, WH Freeman and Co.: 1981). Whether a change in the amino acid sequence of a peptide results in a functional homolog (e.g., functional in the sense that the resulting polypeptide mimics or antagonizes the wild-type form) can be readily determined by assessing the ability of the variant peptide to produce a response in cells in a fashion similar to the wild-type protein, or competitively inhibit such a response.

Polypeptides in which more than one replacement has taken place can readily be tested in the same manner. The variant may be designed so as to retain biological activity of a particular region of the protein. In a non-limiting example, Osawa et al., 1994, Biochemistry and Molecular International 34:1003-1009, discusses the actin binding region of a protein from several different species. The actin binding regions of these species are considered homologous based on the fact that they have amino acids that fall within "homologous residue groups." Homologous residues are judged according to the following groups (using single letter amino acid designations): STAG; ILVMF; HRK; DEQN; and FYW. For example, an S, a T, an A or a G can be in a position and the function (in this case actin binding) is retained.

Additional guidance on amino acid substitution is available from studies of protein evolution. Go et al., 1980, Int. J. Peptide Protein Res. 15:211-224, classified amino acid residue sites as interior or exterior depending on their accessibility. More frequent substitution on exterior sites was confirmed to be general in eight sets of homologous protein families regardless of their biological functions and the presence or absence of a prosthetic group. Virtually all types of amino acid residues had higher mutabilities on the exterior than in the interior. No correlation between mutability and polarity was observed of amino acid residues in the interior and exterior, respectively. Amino acid residues were classified into one of three groups depending on their polarity: polar (Arg, Lys, His, Gln, Asn, Asp, and Glu); weak polar (Ala, Pro, Gly, Thr, and Ser), and nonpolar (Cys, Val, Met, Ile, Leu, Phe, Tyr, and Trp). Amino acid replacements during protein evolution were very conservative: 88% and 76% of them in the interior or exterior, respectively, were within the same group of the three. Inter-group replacements are such that weak polar residues are replaced more often by nonpolar residues in the interior and more often by polar residues on the exterior.

Querol et al., 1996, Prot. Eng. 9:265-271, provides general rules for amino acid substitutions to enhance protein thermostability. New glycosylation sites can be introduced as discussed in Olsen and Thomsen, 1991, J. Gen. Microbiol. 137:579-585. An additional disulfide bridge can be introduced, as discussed by Perry and Wetzel, 1984, Science 226:555-557; Pantoliano et al., 1987, Biochemistry 26:2077-2082; Matsumura et al., 1989, Nature 342:291-293; Nishikawa et al., 1990, Protein Eng. 3:443-448; Takagi et al., 1990, J. Biol. Chem. 265:6874-6878; Clarke et al., 1993, Biochemistry 32:4322-4329; and Wakarchuk et al., 1994, Protein Eng. 7:1379-1386.

An additional metal binding site can be introduced, according to Toma *et al.*, 1991, *Biochemistry* 30:97-106, and Haezrebrouck *et al.*, 1993, *Protein Eng.* 6:643-649. Substitutions with prolines in loops can be made according to Masul *et al.*, 1994, *Appl. Env. Microbiol.* 60:3579-3584; and Hardy *et al.*, *FEBS Lett.* 317:89-92.

5 Cysteine-depleted muteins are considered variants within the scope of the invention. These variants can be constructed according to methods disclosed in U.S. Patent No. 4,959,314, which discloses how to substitute other amino acids for cysteines, and how to determine biological activity and effect of the substitution. Such methods are suitable for proteins according to this invention that have cysteine  
10 residues suitable for such substitutions, for example to eliminate disulfide bond formation.

To learn the identity and function of the gene that correlates with an nucleic acid, the nucleic acids or corresponding amino acid sequences can be screened against profiles of protein families. Such profiles focus on common structural motifs among  
15 proteins of each family. Publicly available profiles are described above. Additional or alternative profiles are described below.

In comparing a new nucleic acid with known sequences, several alignment tools are available. Examples include PileUp, which creates a multiple sequence alignment, and is described in Feng *et al.*, *J. Mol. Evol.* (1987) 25:351-360. Another  
20 method, GAP, uses the alignment method of Needleman *et al.*, *J. Mol. Biol.* (1970) 48:443-453. GAP is best suited for global alignment of sequences. A third method, BestFit, functions by inserting gaps to maximize the number of matches using the local homology algorithm of Smith and Waterman, *Adv. Appl. Math.* (1981) 2:482-489.

25 Examples of such profiles are described below.

#### Chemokines

Chemokines are a family of proteins that have been implicated in lymphocyte trafficking, inflammatory diseases, angiogenesis, hematopoiesis, and viral infection.  
30 See, for example, Rollins, *Blood* (1997) 90(3):909-928, and Wells *et al.*, *J. Leuk. Biol.* (1997) 61:545-550. U.S. Patent No. 5,605,817 discloses DNA encoding a chemokine expressed in fetal spleen. U.S. Patent No. 5,656,724 discloses chemokine-like

proteins and methods of use. U.S. Patent No. 5,602,008 discloses DNA encoding a chemokine expressed by liver.

Mutants of the encoded chemokines are polypeptides having an amino acid sequence that possesses at least one amino acid substitution, addition, or deletion as compared to native chemokines. Fragments possess the same amino acid sequence of the native chemokines; mutants may lack the amino and/or carboxyl terminal sequences. Fusions are mutants, fragments, or the native chemokines that also include amino and/or carboxyl terminal amino acid extensions.

The number or type of the amino acid changes is not critical, nor is the length or number of the amino acid deletions, or amino acid extensions that are incorporated in the chemokines as compared to the native chemokine amino acid sequences. A polynucleotide encoding one of these variant polypeptides will retain at least about 80% amino acid identity with at least one known chemokine. Preferably, these polypeptides will retain at least about 85% amino acid sequence identity, more preferably, at least about 90%; even more preferably, at least about 95%. In addition, the variants will exhibit at least 80%; preferably about 90%; more preferably about 95% of at least one activity exhibited by a native chemokine. Chemokine activity includes immunological, biological, receptor binding, and signal transduction functions of the native chemokine.

Chemotaxis. Assays for chemotaxis relating to neutrophils are described in Walz *et al.*, *Biochem. Biophys. Res. Commun.* (1987) 149:755, Yoshimura *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1987) 84:9233, and Schroder *et al.*, *J. Immunol.* (1987) 139:3474; to lymphocytes, Larsen *et al.*, *Science* (1989) 243:1464, Carr *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1994) 91:3652; to tumor-infiltrating lymphocytes, Liao *et al.*, *J. Exp. Med.* (1995) 182:1301; to hemopoietic progenitors, Aiuti *et al.*, *J. Exp. Med.* (1997) 185:111; to monocytes, Valente *et al.*, *Biochem.* (1988) 27:4162; and to natural killer cells, Loetscher *et al.*, *J. Immunol.* (1996) 156:322, and Allavena *et al.*, *Eur. J. Immunol.* (1994) 24:3233.

Assays for determining the biological activity of attracting eosinophils are described in Dahinden *et al.*, *J. Exp. Med.* (1994) 179:751, Weber *et al.*, *J. Immunol.* (1995) 154:4166, and Noso *et al.*, *Biochem. Biophys. Res. Commun.* (1994) 200:1470; for attracting dendritic cells, Sozzani *et al.*, *J. Immunol.* (1995) 155:3292; for attracting basophils, in Dahinden *et al.*, *J. Exp. Med.* (1994) 179:751, Alam *et al.*, *J.*

*Immunol.* (1994) 152:1298, Alam *et al.*, *J. Exp. Med.* (1992) 176:781; and for activating neutrophils, Maghazaci *et al.*, *Eur. J. Immunol.* (1996) 26:315, and Taub *et al.*, *J. Immunol.* (1995) 155:3877. Native chemokines can act as mitogens for fibroblasts, assayed as described in Mullenbach *et al.*, *J. Biol. Chem.* (1986) 261:719.

5        Receptor Binding. Native chemokines exhibit binding activity with a number of receptors. Description of such receptors and assays to detect binding are described in, for example, Murphy *et al.*, *Science* (1991) 253:1280; Combadiere *et al.*, *J. Biol. Chem.* (1995) 270:29671; Daugherty *et al.*, *J. Exp. Med.* (1996) 183:2349; Samson *et al.*, *Biochem.* (1996) 35:3362; Raport *et al.*, *J. Biol. Chem.* (1996) 271:17161;  
10      Combadiere *et al.*, *J. Leukoc. Biol.* (1996) 60:147; Baba *et al.*, *J. Biol. Chem.* (1997) 23:14893; Yosida *et al.*, *J. Biol. Chem.* (1997) 272:13803; Arvanitakis *et al.*, *Nature* (1997) 385:347, and many other assays are known in the art.

Kinase Activation. Assays for kinase activation are described by Yen *et al.*, *J. Leukoc. Biol.* (1997) 61:529; Dubois *et al.*, *J. Immunol.* (1996) 156:1356; Turner *et al.*, *J. Immunol.* (1995) 155:2437. Assays for inhibition of angiogenesis or cell  
15      proliferation are described in Maione *et al.*, *Science* (1990) 247:77.

Glycosaminoglycan production can be induced by native chemokines, assayed as described in Castor *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1983) 80:765. Chemokine-mediated histamine release from basophils is assayed as described in Dahinden *et al.*,  
20      *J. Exp. Med.* (1989) 170:1787; and White *et al.*, *Immunol. Lett.* (1989) 22:151. Heparin binding is described in Luster *et al.*, *J. Exp. Med.* (1995) 182:219.

Dimerization Activity. Chemokines can possess dimerization activity, which can be assayed according to Burrows *et al.*, *Biochem.* (1994) 33:12741; and Zhang *et al.*, *Mol. Cell. Biol.* (1995) 15:4851. Native chemokines can play a role in the  
25      inflammatory response of viruses. This activity can be assayed as described in Bleul *et al.*, *Nature* (1996) 382:829; and Oberlin *et al.*, *Nature* (1996) 382:833. Exocytosis of monocytes can be promoted by native chemokines. The assay for such activity is described in Ugucioni *et al.*, *Eur. J. Immunol.* (1995) 25:64. Native chemokines also can inhibit hemopoietic stem cell proliferation. The method for testing for such  
30      activity is reported in Graham *et al.*, *Nature* (1990) 344:442.

Death Domain Proteins Several protein families contain death domain motifs (Feinstein and Kimchi, *TIBS Letters* (1995) 20:242-244). Some death domain-containing proteins are implicated in cytotoxic intracellular signaling (Cleveland and

Ihle, *Cell* (1995) 81:479-482, Pan *et al*, *Science* (1997) 276:111-113, Duan and Dixit, *Nature* (1997) 385:86-89, and Chinnaiyan *et al*, *Science* (1996) 274:990-992). U.S. Patent No. 5,563,039 describes a protein homologous to TRADD (Tumor Necrosis Factor Receptor-1 Associated Death Domain containing protein), and modifications of the active domain of TRADD that retain the functional characteristics of the protein, as well as apoptosis assays for testing the function of such death domain containing proteins. U.S. Patent No. 5,658,883 discloses biologically active TGF-B1 peptides. U.S. Patent No. 5,674,734 discloses protein RIP which contains a C-terminal death domain and an N-terminal kinase domain.

10        Leukemia Inhibitory Factor (LIF) An LIF profile is constructed from sequences of leukemia inhibitor factor, CT-1 (cardiotrophin-1), CNTF (ciliary neurotrophic factor), OSM (oncostatin M), and IL-6 (interleukin-6). This profile encompasses a family of secreted cytokines that have pleiotropic effects on many cell types including hepatocytes, osteoclasts, neuronal cells and cardiac myocytes, and can be used to detect additional genes encoding such proteins. These molecules are all structurally related and share a common co-receptor gp130 which mediates intracellular signal transduction by cytoplasmic tyrosine kinases such as src.

Novel proteins related to this family are also likely to be secreted, to activate gp130 and to function in the development of a variety of cell types. Thus new members of this family would be candidates to be developed as growth or survival factors for the cell types that they stimulate. For more details on this family of cytokines, see Pennica *et al*, *Cytokine and Growth Factor Reviews* (1996) 7:81-91. U.S. Patent No. 5,420,247 discloses LIF receptor and fusion proteins. U.S. Patent No. 5,443,825 discloses human LIF.

25        Angiopoietin Angiopoietin-1 is a secreted ligand of the TIE-2 tyrosine kinase; it functions as an angiogenic factor critical for normal vascular development. Angiopoietin-2 is a natural antagonist of angiopoietin-1 and thus functions as an anti-angiogenic factor. These two proteins are structurally similar and activate the same receptor. (Folkman and D'Amore, *Cell* (1996) 87:1153-1155, and Davis *et al*, *Cell* (1996) 87:1161-1169.)

30        The angiopoietin molecules are composed of two domains, a coiled-coil region and a region related to fibrinogen. The fibrinogen domain is found in many molecules including ficolin and tesascin, and is well defined structurally with many members.

Receptor Protein-Tyrosine Kinases Receptor Protein-Tyrosine Kinases or RPTKs are described in Lindberg, *Annu. Rev. Cell Biol.* (1994) 10:251-337.

Growth Factors: Epidermal Growth Factor (EGF) and Fibroblast Growth Factor (FGF)

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For a discussion of growth factor superfamilies, see Growth Factors: A Practical Approach, Appendix A1 (Ed. McKay and Leigh, Oxford University Press, NY, 1993) pp. 237-243.

The alignments (pretty box) for EGF and FGF are shown in Figures 1 and 2, respectively. U.S. Patent No. 4,444,760 discloses acidic brain fibroblast growth factor, which is active in the promotion of cell division and wound healing. U.S. Patent No. 5,439,818 discloses DNA encoding human recombinant basic fibroblast growth factor, which is active in wound healing. U.S. Patent No. 5,604,293 discloses recombinant human basic fibroblast growth factor, which is useful for wound healing. U.S. Patent No. 5,410,832 discloses brain-derived and recombinant acidic fibroblast growth factor, which act as mitogens for mesoderm and neuroectoderm-derived cells in culture, and promote wound healing in soft tissue, cartilaginous tissue and musculo-skeletal tissue. U.S. Patent No. 5,387,673 discloses biologically active fragments of FGF that retain activity.

20 Proteins of the TNF Family A profile derived from the TNF family is created by aligning sequences of the following TNF family members: nerve growth factor (NGF), lymphotoxin, Fas ligand, tumor necrosis factor (TNF), CD40 ligand, TRAIL, ox40 ligand, 4-1BB ligand, CD27 ligand, and CD30 ligand. The profile is designed to identify sequences of proteins that constitute new members or homologues of this family of proteins.

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U.S. Patent No. 5,606,023 discloses mutant TNF proteins; U.S. Patent No. 5,597,899 and U.S. Patent No. 5,486,463 disclose TNF muteins; and U.S. Patent No. 5,652,353 discloses DNA encoding TNF- $\alpha$  muteins.

Members of the TNF family of proteins have been show in vitro to multimerize, as described in Burrows *et al.*, *Biochem.* (1994) 33:12741 and Zhang *et al.*, *Mol. Cell. Biol.* (1995) 154851 and bind receptors as described in Browning *et al.*, *J. Immunol.* (1994) 147:1230, Androlewicz *et al.*, *J. Biol. Chem.* (1992) 267:2542, and Crowe *et al.*, *Science* (1994) 264:707.

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In vivo, TNFs proteolytically cleave a target protein as described in Kriegel *et al.*, *Cell* (1988) 53:45 and Mohler *et al.*, *Nature* (1994) 370:218 and demonstrate cell proliferation and differentiation activity. T-cell or thymocyte proliferation is assayed as described in Armitage *et al.*, *Eur. J. Immunol.* (1992) 22:447; Current Protocols in Immunology, ed. J.E. Coligan *et al.*, 3.1-3.19; Takai *et al.*, *J. Immunol.* (1986) 137:3494-3500, Bertagnoli *et al.*, *J. Immunol.* (1990) 145:1706-1712, Bertagnoli *et al.*, *J. Immunol.* (1991) 133:327-340, Bertagnoli *et al.*, *J. Immunol.* (1992) 149:3778-3783, and Bowman *et al.*, *J. Immunol.* (1994) 152:1756-1761. B cell proliferation and Ig secretion are assayed as described in Maliszewski, *J. Immunol.* (1990) 144:3028-3033, and Assays for B Cell Function: In vitro antibody production, Mond and Brunswick, Current Protocols in Immunol., Coligan Ed vol 1 pp 3.8.1-3.8.16, John Wiley and Sons, Toronto 1994, Kehrl *et al.*, *Science* (1987) 238:1144 and Boussiotis *et al.*, *PNAS USA* (1994) 91:7007.

Other in vivo activities include upregulation of cell surface antigens, upregulation of costimulatory molecules, and cellular aggregation/adhesion as described in Barrett *et al.*, *J. Immunol.* (1991) 146:1722; Bjorck *et al.*, *Eur. J. Immunol.* (1993) 23:1771; Clark *et al.*, *Annu Rev. Immunol.* (1991) 9:97; Ranheim *et al.*, *J. Exp. Med.* (1994) 177:925; Yellin, *J. Immunol.* (1994) 153:666; and Gruss *et al.*, *Blood* (1994) 84:2305.

Proliferation and differentiation of hematopoietic and lymphopoietic cells has also been shown in vivo for TNFs, using assays for embryonic differentiation and hematopoiesis as described in Johansson *et al.*, *Cellular Biology* (1995) 15:141-151, Keller *et al.*, *Mol. Cell. Biol.* (1993) 13:473-486, McClanahan *et al.*, *Blood* (1993) 81:2903-2915 and using assays to detect stem cell survival and differentiation as described in Culture of Hematopoietic Cells, Freshney *et al.* eds, pp 1-21, 23-29, 139-162, 163-179, and 265-268, Wiley-Liss, Inc., New York, NY, 1994, and Hirajama *et al.*, *PNAS USA* (1992) 89:5907-5911.

In vivo activities of TNFs also include lymphocyte survival and apoptosis, assayed as described in Darzynkewicz *et al.*, *Cytometry* (1992) 13:795-808; Gorczyca *et al.*, *Leukemia* (1993) 7:659-670; Itoh *et al.*, *Cell* (1991) 66:233-243; Zacharduk, *J. Immunol.* (1990) 145:4037-4045; Zamai *et al.*, *Cytometry* (1993) 14:891-897; and Gorczyca *et al.*, *Int'l J. Oncol.* (1992) 1:639-648.

Some members of the TNF family are cleaved from the cell surface; others remain membrane bound. The three-dimensional structure of TNF is discussed in Sprang and Eck, Tumor Necrosis Factors; *supra*.

5 TNF proteins include a transmembrane domain. The protein is cleaved into a shorter soluble version, as described in Kriegler *et al.*, *Cell* (1988) 53:45-53, Perez *et al.*, *Cell* (1990) 63:251-258, and Shaw *et al.*, *Cell* (1986) 46:659-667. The transmembrane domain is between amino acid 46 and 77 and the cytoplasmic domain is between position 1 and 45 on the human form of TNF $\alpha$ . The 3-dimensional motifs of TNF include a sandwich of two pleated  $\beta$ -sheets. Each sheet is composed of anti-  
10 parallel  $\alpha$ -strands.  $\alpha$ -Strands facing each other on opposite sites of the sandwich are connected by short polypeptide loops, as described in Van Ostade *et al.*, *Protein Engineering* (1994) 7(1):5-22, and Sprang *et al.*, Tumor Necrosis Factors; *supra*.

Residues of the TNF family proteins that are involved in the  $\beta$ -sheet secondary structure have been identified as described in Van Ostade *et al.*, *Protein Engineering*  
15 (1994) 7(1):5-22, and Sprang *et al.*, Tumor Necrosis Factors; *supra*.

TNF receptors are disclosed in U.S. Patent No. 5,395,760. A profile derived from the TNF receptor family is created by aligning sequences of the TNF receptor family, including Apo1/Fas, TNFR I and II, death receptor3 (DR3), CD40, ox40, CD27, and CD30. Thus, the profile is designed to identify, from the nucleic acids of  
20 the invention, sequences of proteins that constitute new members or homologs of this family of proteins.

Tumor necrosis factor receptors exist in two forms in humans: p55 TNFR and p75 TNFR, both of which provide intracellular signals upon binding with a ligand. The extracellular domains of these receptor proteins are cysteine rich. The receptors  
25 can remain membrane bound, although some forms of the receptors are cleaved forming soluble receptors. The regulation, diagnostic, prognostic, and therapeutic value of soluble TNF receptors is discussed in Aderka, *Cytokine and Growth Factor Reviews*, (1996) 7(3):231-240.

PDGF Family U.S. Patent No. 5,326,695 discloses platelet derived growth  
30 factor agonists; bioactive portions of PDGF-B are used as agonists. U.S. Patent No. 4,845,075 discloses biologically active B-chain homodimers, and also includes variants and derivatives of the PDGF-B chain. U.S. Patent No. 5,128,321 discloses

PDGF analogs and methods of use. Proteins having the same bioactivity as PDGF are disclosed, including A and B chain proteins.

Kinase (Including MKK) Family U.S. Patent No. 5,650,501 discloses serine/threonine kinase, associated with mitotic and meiotic cell division; the protein  
5 has a kinase domain in its N-terminal and 3 PEST regions in the C-terminus. U.S. Patent No. 5,605,825 discloses human PAK65, a serine protein kinase.

The foregoing discussion provides a few examples of the protein profiles that can be compared with the nucleic acids of the invention. One skilled in the art can use these and other protein profiles to identify the genes that correlate with the nucleic  
10 acids.

#### IX. Determining the Function of the Encoded Expression Products

Ribozymes, antisense constructs, dominant negative mutants, and triplex formation can be used to determine function of the expression product of an nucleic  
15 acid-related gene.

##### A. Ribozymes

Trans-cleaving catalytic RNAs (ribozymes) are RNA molecules possessing endoribonuclease activity. Ribozymes are specifically designed for a particular target, and the target message must contain a specific nucleotide sequence. They are  
20 engineered to cleave any RNA species site-specifically in the background of cellular RNA. The cleavage event renders the mRNA unstable and prevents protein expression. Importantly, ribozymes can be used to inhibit expression of a gene of unknown function for the purpose of determining its function in an in vitro or in vivo context, by detecting the phenotypic effect.

25 One commonly used ribozyme motif is the hammerhead, for which the substrate sequence requirements are minimal. Design of the hammerhead ribozyme is disclosed in Usman *et al.*, *Current Opin. Struct. Biol.* (1996) 6:527-533. Usman also discusses the therapeutic uses of ribozymes. Ribozymes can also be prepared and used as described in Long *et al.*, *FASEB J.* (1993) 7:25; Symons, *Ann. Rev. Biochem.* (1992) 61:641; Perrotta *et al.*, *Biochem.* (1992) 31:16-17; Ojwang *et al.*,  
30 *Proc. Natl. Acad. Sci. (USA)* (1992) 89:10802-10806; and U.S. Patent No. 5,254,678. Ribozyme cleavage of HIV-I RNA is described in U.S. Patent No. 5,144,019; methods of cleaving RNA using ribozymes is described in U.S. Patent No.

5,116,742; and methods for increasing the specificity of ribozymes are described in U.S. Patent No. 5,225,337 and Koizumi *et al.*, *Nucleic Acid Res.* (1989) 17:7059-7071. Preparation and use of ribozyme fragments in a hammerhead structure are also described by Koizumi *et al.*, *Nucleic Acids Res.* (1989) 17:7059-7071. Preparation  
5 and use of ribozyme fragments in a hairpin structure are described by Chowrira and Burke, *Nucleic Acids Res.* (1992) 20:2835. Ribozymes can also be made by rolling transcription as described in Daubendiek and Kool, *Nat. Biotechnol.* (1997) 15(3):273-277.

The hybridizing region of the ribozyme may be modified or may be prepared  
10 as a branched structure as described in Horn and Urdea, *Nucleic Acids Res.* (1989) 17:6959-67. The basic structure of the ribozymes may also be chemically altered in ways familiar to those skilled in the art, and chemically synthesized ribozymes can be administered as synthetic oligonucleotide derivatives modified by monomeric units. In a therapeutic context, liposome mediated delivery of ribozymes improves cellular  
15 uptake, as described in Birikh *et al.*, *Eur. J. Biochem.* (1997) 245:1-16.

Using the nucleic acid sequences of the invention and methods known in the art, ribozymes are designed to specifically bind and cut the corresponding mRNA species. Ribozymes thus provide a means to inhibit the expression of any of the proteins encoded by the disclosed nucleic acids or their full-length genes. The full-  
20 length gene need not be known in order to design and use specific inhibitory ribozymes. In the case of a nucleic acid or cDNA of unknown function, ribozymes corresponding to that nucleotide sequence can be tested in vitro for efficacy in cleaving the target transcript. Those ribozymes that effect cleavage in vitro are further tested in vivo. The ribozyme can also be used to generate an animal model for a  
25 disease, as described in Birikh *et al.*, *Eur. J. Biochem.* (1997) 245:1-16. An effective ribozyme is used to determine the function of the gene of interest by blocking its transcription and detecting a change in the cell. Where the gene is found to be a mediator in a disease, an effective ribozyme is designed and delivered in a gene therapy for blocking transcription and expression of the gene.

30 Therapeutic and functional genomic applications of ribozymes proceed beginning with knowledge of a portion of the coding sequence of the gene to be inhibited. Thus, for many genes, a partial nucleic acid sequence provides adequate sequence for constructing an effective ribozyme. A target cleavage site is selected in

the target sequence, and a ribozyme is constructed based on the 5' and 3' nucleotide sequences that flank the cleavage site. Retroviral vectors are engineered to express monomeric and multimeric hammerhead ribozymes targeting the mRNA of the target coding sequence. These monomeric and multimeric ribozymes are tested in vitro for an ability to cleave the target mRNA. A cell line is stably transduced with the retroviral vectors expressing the ribozymes, and the transduction is confirmed by Northern blot analysis and reverse-transcription polymerase chain reaction (RT-PCR). The cells are screened for inactivation of the target mRNA by such indicators as reduction of expression of disease markers or reduction of the gene product of the target mRNA.

#### B. Antisense

Antisense nucleic acids are designed to specifically bind to RNA, resulting in the formation of RNA-DNA or RNA-RNA hybrids, with an arrest of DNA replication, reverse transcription or messenger RNA translation. Antisense polynucleotides based on a selected nucleic acid sequence can interfere with expression of the corresponding gene. Antisense polynucleotides are typically generated within the cell by expression from antisense constructs that contain the antisense nucleic acid strand as the transcribed strand. Antisense nucleic acids will bind and/or interfere with the translation of nucleic acid-related mRNA. The expression products of control cells and cells treated with the antisense construct are compared to detect the protein product of the gene corresponding to the nucleic acid. The protein is isolated and identified using routine biochemical methods.

One rationale for using antisense methods to determine the function of the gene corresponding to a nucleic acid is the biological activity of antisense therapeutics. Antisense therapy for a variety of cancers is in clinical phase and has been discussed extensively in the literature. Reed reviewed antisense therapy directed at the Bcl-2 gene in tumors; gene transfer-mediated overexpression of Bcl-2 in tumor cell lines conferred resistance to many types of cancer drugs. (Reed, J.C., *N.C.I.* (1997) 89:988-990). The potential for clinical development of antisense inhibitors of *ras* is discussed by Cowser, L.M., *Anti-Cancer Drug Design* (1997) 12:359-371. Additional important antisense targets include leukemia (Geurtz, A.M., *Anti-Cancer Drug Design* (1997) 12:341-358); human C-ref kinase (Monia, B.P., *Anti-Cancer*

*Drug Design* (1997) 12:327-339); and protein kinase C (McGraw *et al.*, *Anti-Cancer Drug Design* (1997) 12:315-326.

Given the extensive background literature and clinical experience in antisense therapy, one skilled in the art can use selected nucleic acids of the invention as  
5 additional potential therapeutics. The choice of nucleic acid can be narrowed by first testing them for binding to "hot spot" regions of the genome of cancerous cells. If a nucleic acid is identified as binding to a "hot spot", testing the nucleic acid as an antisense compound in the corresponding cancer cells clearly is warranted.

Ogunbiyi *et al.*, *Gastroenterology* (1997) 113(3):761-766 describe prognostic  
10 use of allelic loss in colon cancer; Barks *et al.*, *Genes, Chromosomes, and Cancer* (1997) 19(4):278-285 describe increased chromosome copy number detected by FISH in malignant melanoma; Nishizake *et al.*, *Genes, Chromosomes, and Cancer* (1997) 19(4):267-272 describe genetic alterations in primary breast cancer and their metastases and direct comparison using modified comparative genome hybridization;  
15 and Elo *et al.*, *Cancer Research* (1997) 57(16):3356-3359 disclose that loss of heterozygosity at 16z24.1-q24.2 is significantly associated with metastatic and aggressive behavior of prostate cancer.

#### C. Dominant Negative Mutations

20 As an alternative method for identifying function of the nucleic acid-related gene, dominant negative mutations are readily generated for corresponding proteins that are active as homomultimers. A mutant polypeptide will interact with wild-type polypeptides (made from the other allele) and form a non-functional multimer. Thus, a mutation is in a substrate-binding domain, a catalytic domain, or a cellular  
25 localization domain. Preferably, the mutant polypeptide will be overproduced. Point mutations are made that have such an effect. In addition, fusion of different polypeptides of various lengths to the terminus of a protein can yield dominant negative mutants. General strategies are available for making dominant negative mutants. See Herskowitz, *Nature* (1987) 329:219-222. Such a technique can be used  
30 for creating a loss-of-function mutation, which is useful for determining the function of a protein.

#### D. Triplex Formation

Endogenous gene expression can also be reduced by inactivating or “knocking out” the gene or its promoter using targeted homologous recombination. (E.g., see Smithies *et al.*, 1985, *Nature* 317:230-234; Thomas & Capecchi, 1987, *Cell* 51:503-512; Thompson *et al.*, 1989 *Cell* 5:313-321; each of which is incorporated by  
5 reference herein in its entirety). For example, a mutant, non-functional gene (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous gene (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express that gene *in vivo*. Insertion of the DNA construct, via  
10 targeted homologous recombination, results in inactivation of the gene.

Alternatively, endogenous gene expression can be reduced by targeting deoxyribonucleotide sequences complementary to the regulatory region of the target gene (i.e., the gene promoter and/or enhancers) to form triple helical structures that prevent transcription of the gene in target cells in the body. (See generally, Helene, C.  
15 1991, *Anticancer Drug Des.*, 6(6):569-84; Helene, C., *et al.*, 1992, *Ann. N.Y. Acad. Sci.*, 660:27-36; and Maher, L.J., 1992, *Bioassays* 14(12):807-15).

Nucleic acid molecules to be used in triple helix formation for the inhibition of transcription are preferably single stranded and composed of deoxyribonucleotides. The base composition of these oligonucleotides should promote triple helix formation  
20 via Hoogsteen base-pairing rules, which generally require sizable stretches of either purines or pyrimidines to be present on one strand of a duplex. Nucleotide sequences may be pyrimidine-based, which will result in TAT and CGC triplets across the three associated strands of the resulting triple helix. The pyrimidine-rich molecules provide base complementarity to a purine-rich region of a single strand of the duplex in a  
25 parallel orientation to that strand. In addition, nucleic acid molecules may be chosen that are purine-rich, for example, containing a stretch of G residues. These molecules will form a triple helix with a DNA duplex that is rich in GC pairs, in which the majority of the purine residues are located on a single strand of the targeted duplex, resulting in CGC triplets across the three strands in the triplex.

Alternatively, the potential sequences that can be targeted for triple helix  
30 formation may be increased by creating a so called “switchback” nucleic acid molecule. Switchback molecules are synthesized in an alternating 5'-3', 3'-5' manner, such that they base pair with first one strand of a duplex and then the other,

eliminating the necessity for a sizable stretch of either purines or pyrimidines to be present on one strand of a duplex.

Antisense RNA and DNA, ribozyme, and triple helix molecules of the invention may be prepared by any method known in the art for the synthesis of DNA and RNA molecules. These include techniques for chemically synthesizing oligodeoxyribonucleotides and oligoribonucleotides well known in the art such as for example solid phase phosphoramidite chemical synthesis. Alternatively, RNA molecules may be generated by *in vitro* and *in vivo* transcription of DNA sequences encoding the antisense RNA molecule. Such DNA sequences may be incorporated into a wide variety of vectors which incorporate suitable RNA polymerase promoters such as the T7 or SP6 polymerase promoters. Alternatively, antisense cDNA constructs that synthesize antisense RNA constitutively or inducibly, depending on the promoter used, can be introduced stably into cell lines.

Moreover, various well known modifications to nucleic acid molecules may be introduced as a means of increasing intracellular stability and half-life. Possible modifications include but are not limited to the addition of flanking sequences of ribonucleotides or deoxyribonucleotides to the 5' and/or 3' ends of the molecule or the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages within the oligodeoxyribonucleotide backbone.

20

#### X. Diagnostic & Prognostic Assays and Drug Screening Methods

The present invention provides method for determining whether a subject is at risk for developing a disease or condition characterized by unwanted cell proliferation by detecting the disclosed biomarkers, i.e., the disclosed nucleic acid markers (SEQ ID Nos: 1-544) and/or polypeptide markers for colon cancer encoded thereby.

25

In clinical applications, human tissue samples can be screened for the presence and/or absence of the biomarkers identified herein. Such samples could consist of needle biopsy cores, surgical resection samples, lymph node tissue, or serum. For example, these methods include obtaining a biopsy, which is optionally fractionated by cryostat sectioning to enrich tumor cells to about 80% of the total cell population. In certain embodiments, nucleic acids extracted from these samples may be amplified using techniques well known in the art. The levels of selected markers detected

30



would be compared with statistically valid groups of metastatic, non-metastatic malignant, benign, or normal colon tissue samples.

In one embodiment, the diagnostic method comprises determining whether a subject has an abnormal mRNA and/or protein level of the disclosed markers, such as  
5 by Northern blot analysis, reverse transcription-polymerase chain reaction (RT-PCR),  
*in situ* hybridization, immunoprecipitation, Western blot hybridization, or immunohistochemistry. According to the method, cells are obtained from a subject and the levels of the disclosed biomarkers, protein or mRNA level, is determined and compared to the level of these markers in a healthy subject. An abnormal level of the  
10 biomarker polypeptide or mRNA levels is likely to be indicative of cancer such as colon cancer.

Accordingly, in one aspect, the invention provides probes and primers that are specific to the unique nucleic acid markers disclosed herein. Accordingly, the nucleic acid probes comprise a nucleotide sequence at least 12 nucleotides in length,  
15 preferably at least 15 nucleotides, more preferably, 25 nucleotides, and most preferably at least 40 nucleotides, and up to all or nearly all of the coding sequence which is complementary to a portion of the coding sequence of a marker nucleic acid sequence, which nucleic acid sequence is represented by SEQ ID Nos: 1-544 or a sequence complementary thereto.

20 In one embodiment, the method comprises using a nucleic acid probe to determine the presence of cancerous cells in a tissue from a patient. Specifically, the method comprises:

1. providing a nucleic acid probe comprising a nucleotide  
sequence at least 12 nucleotides in length, preferably at least 15  
25 nucleotides, more preferably, 25 nucleotides, and most preferably at least 40 nucleotides, and up to all or nearly all of the coding sequence which is complementary to a portion of the coding sequence of a nucleic acid sequence represented by SEQ ID Nos: 1-544 or a sequence complementary thereto and is  
30 differentially expressed in tumors cells, such as colon cancer cells;
2. obtaining a tissue sample from a patient potentially comprising cancerous cells;

3. providing a second tissue sample containing cells substantially all of which are non-cancerous;
4. contacting the nucleic acid probe under stringent conditions with RNA of each of said first and second tissue samples (e.g., in a Northern blot or in situ hybridization assay); and
5. comparing (a) the amount of hybridization of the probe with RNA of the first tissue sample, with (b) the amount of hybridization of the probe with RNA of the second tissue sample; wherein a statistically significant difference in the amount of hybridization with the RNA of the first tissue sample as compared to the amount of hybridization with the RNA of the second tissue sample is indicative of the presence of cancerous cells in the first tissue sample.

In one aspect, the method comprises in situ hybridization with a probe derived from a given marker nucleic acid sequence, which nucleic acid sequence is represented by SEQ ID Nos: 1-544 or a sequence complementary thereto. The method comprises contacting the labeled hybridization probe with a sample of a given type of tissue potentially containing cancerous or pre-cancerous cells as well as normal cells, and determining whether the probe labels some cells of the given tissue type to a degree significantly different (e.g., by at least a factor of two, or at least a factor of five, or at least a factor of twenty, or at least a factor of fifty) than the degree to which it labels other cells of the same tissue type.

Also within the invention is a method of determining the phenotype of a test cell from a given human tissue, e.g., whether the cell is (a) normal, or (b) cancerous or precancerous, by contacting the mRNA of a test cell with a nucleic acid probe at least 12 nucleotides in length, preferably at least 15 nucleotides, more preferably at least 25 nucleotides, and most preferably at least 40 nucleotides, and up to all or nearly all of a sequence which is complementary to a portion of the coding sequence of a nucleic acid sequence represented by SEQ ID Nos: 1-544 or a sequence complementary thereto, and which is differentially expressed in tumor cells as compared to normal cells of the given tissue type; and determining the approximate amount of hybridization of the probe to the mRNA, an amount of hybridization either more or less than that seen with the mRNA of a normal cell of that tissue type being indicative that the test cell is cancerous or pre-cancerous.

Alternatively, the above diagnostic assays may be carried out using antibodies to detect the protein product encoded by the marker nucleic acid sequence, which nucleic acid sequence is represented by SEQ ID Nos: 1-544 or a sequence complementary thereto. Accordingly, in one embodiment, the assay would include contacting the proteins of the test cell with an antibody specific for the gene product of a nucleic acid represented by SEQ ID Nos: 1-544 or a sequence complementary thereto, the marker nucleic acid being one which is expressed at a given control level in normal cells of the same tissue type as the test cell, and determining the approximate amount of immunocomplex formation by the antibody and the proteins of the test cell, wherein a statistically significant difference in the amount of the immunocomplex formed with the proteins of a test cell as compared to a normal cell of the same tissue type is an indication that the test cell is cancerous or pre-cancerous.

Another such method includes the steps of: providing an antibody specific for the gene product of a marker nucleic acid sequence represented by SEQ ID Nos 1-544, the gene product being present in cancerous tissue of a given tissue type (e.g., colon tissue) at a level more or less than the level of the gene product in non-cancerous tissue of the same tissue type; obtaining from a patient a first sample of tissue of the given tissue type, which sample potentially includes cancerous cells; providing a second sample of tissue of the same tissue type (which may be from the same patient or from a normal control, e.g. another individual or cultured cells), this second sample containing normal cells and essentially no cancerous cells; contacting the antibody with protein (which may be partially purified, in lysed but unfractionated cells, or in situ) of the first and second samples under conditions permitting immunocomplex formation between the antibody and the marker nucleic acid sequence product present in the samples; and comparing (a) the amount of immunocomplex formation in the first sample, with (b) the amount of immunocomplex formation in the second sample, wherein a statistically significant difference in the amount of immunocomplex formation in the first sample less as compared to the amount of immunocomplex formation in the second sample is indicative of the presence of cancerous cells in the first sample of tissue.

The subject invention further provides a method of determining whether a cell sample obtained from a subject possesses an abnormal amount of marker polypeptide which comprises (a) obtaining a cell sample from the subject, (b) quantitatively

determining the amount of the marker polypeptide in the sample so obtained, and (c) comparing the amount of the marker polypeptide so determined with a known standard, so as to thereby determine whether the cell sample obtained from the subject possesses an abnormal amount of the marker polypeptide. Such marker polypeptides  
5 may be detected by immunohistochemical assays, dot-blot assays, ELISA and the like.

Immunoassays are commonly used to quantitate the levels of proteins in cell samples, and many other immunoassay techniques are known in the art. The invention is not limited to a particular assay procedure, and therefore is intended to  
10 include both homogeneous and heterogeneous procedures. Exemplary immunoassays which can be conducted according to the invention include fluorescence polarization immunoassay (FPIA), fluorescence immunoassay (FIA), enzyme immunoassay (EIA), nephelometric inhibition immunoassay (NIA), enzyme linked immunosorbent assay (ELISA), and radioimmunoassay (RIA). An indicator moiety, or label group, can be  
15 attached to the subject antibodies and is selected so as to meet the needs of various uses of the method which are often dictated by the availability of assay equipment and compatible immunoassay procedures. General techniques to be used in performing the various immunoassays noted above are known to those of ordinary skill in the art.

In another embodiment, the level of the encoded product, i.e., the product  
20 encoded by SEQ ID Nos 1-544 or a sequence complementary thereto, in a biological fluid (e.g., blood or urine) of a patient may be determined as a way of monitoring the level of expression of the marker nucleic acid sequence in cells of that patient. Such a method would include the steps of obtaining a sample of a biological fluid from the patient, contacting the sample (or proteins from the sample) with an antibody specific  
25 for a encoded marker polypeptide, and determining the amount of immune complex formation by the antibody, with the amount of immune complex formation being indicative of the level of the marker encoded product in the sample. This determination is particularly instructive when compared to the amount of immune complex formation by the same antibody in a control sample taken from a normal  
30 individual or in one or more samples previously or subsequently obtained from the same person.

In another embodiment, the method can be used to determine the amount of marker polypeptide present in a cell, which in turn can be correlated with progression

of a hyperproliferative disorder, e.g., colon cancer. The level of the marker polypeptide can be used predictively to evaluate whether a sample of cells contains cells which are, or are predisposed towards becoming, transformed cells. Moreover, the subject method can be used to assess the phenotype of cells which are known to be transformed, the phenotyping results being useful in planning a particular therapeutic regimen. For instance, very high levels of the marker polypeptide in sample cells is a powerful diagnostic and prognostic marker for a cancer, such as colon cancer. The observation of marker polypeptide level can be utilized in decisions regarding, e.g., the use of more aggressive therapies.

10           As set out above, one aspect of the present invention relates to diagnostic assays for determining, in the context of cells isolated from a patient, if the level of a marker polypeptide is significantly reduced in the sample cells. The term "significantly reduced" refers to a cell phenotype wherein the cell possesses a reduced cellular amount of the marker polypeptide relative to a normal cell of similar tissue origin. For example, a cell may have less than about 50%, 25%, 10%, or 5% of the marker polypeptide that a normal control cell. In particular, the assay evaluates the level of marker polypeptide in the test cells, and, preferably, compares the measured level with marker polypeptide detected in at least one control cell, e.g., a normal cell and/or a transformed cell of known phenotype.

20           Of particular importance to the subject invention is the ability to quantitate the level of marker polypeptide as determined by the number of cells associated with a normal or abnormal marker polypeptide level. The number of cells with a particular marker polypeptide phenotype may then be correlated with patient prognosis. In one embodiment of the invention, the marker polypeptide phenotype of the lesion is determined as a percentage of cells in a biopsy which are found to have abnormally high/low levels of the marker polypeptide. Such expression may be detected by immunohistochemical assays, dot-blot assays, ELISA and the like.

25           Where tissue samples are employed, immunohistochemical staining may be used to determine the number of cells having the marker polypeptide phenotype. For such staining, a multiblock of tissue is taken from the biopsy or other tissue sample and subjected to proteolytic hydrolysis, employing such agents as protease K or pepsin. In certain embodiments, it may be desirable to isolate a nuclear fraction from the sample cells and detect the level of the marker polypeptide in the nuclear fraction.

The tissue samples are fixed by treatment with a reagent such as formalin, glutaraldehyde, methanol, or the like. The samples are then incubated with an antibody, preferably a monoclonal antibody, with binding specificity for the marker polypeptides. This antibody may be conjugated to a label for subsequent detection of binding. Samples are incubated for a time sufficient for formation of the immuno-complexes. Binding of the antibody is then detected by virtue of a label conjugated to this antibody. Where the antibody is unlabeled, a second labeled antibody may be employed, e.g., which is specific for the isotype of the anti-marker polypeptide antibody. Examples of labels which may be employed include radionuclides, fluorescers, chemilumescers, enzymes and the like.

Where enzymes are employed, the substrate for the enzyme may be added to the samples to provide a colored or fluorescent product. Examples of suitable enzymes for use in conjugates include horseradish peroxidase, alkaline phosphatase, malate dehydrogenase and the like. Where not commercially available, such antibody-enzyme conjugates are readily produced by techniques known to those skilled in the art.

In one embodiment, the assay is performed as a dot blot assay. The dot blot assay finds particular application where tissue samples are employed as it allows determination of the average amount of the marker polypeptide associated with a single cell by correlating the amount of marker polypeptide in a cell-free extract produced from a predetermined number of cells.

It is well established in the cancer literature that tumor cells of the same type (e.g., breast and/or colon tumor cells) may not show uniformly increased expression of individual oncogenes or uniformly decreased expression of individual tumor suppressor genes. There may also be varying levels of expression of a given marker gene even between cells of a given type of cancer, further emphasizing the need for reliance on a battery of tests rather than a single test. Accordingly, in one aspect, the invention provides for a battery of tests utilizing a number of probes of the invention, in order to improve the reliability and/or accuracy of the diagnostic test.

In one embodiment, the present invention also provides a method wherein nucleic acid probes are immobilized on a DNA chip in an organized array. Oligonucleotides can be bound to a solid support by a variety of processes, including lithography. For example a chip can hold up to 250,000 oligonucleotides (GeneChip,

Affymetrix). These nucleic acid probes comprise a nucleotide sequence at least about 12 nucleotides in length, preferably at least about 15 nucleotides, more preferably at least about 25 nucleotides, and most preferably at least about 40 nucleotides, and up to all or nearly all of a sequence which is complementary to a portion of the coding  
5 sequence of a marker nucleic acid sequence represented by SEQ ID Nos: 1-544 and is differentially expressed in tumor cells, such as colon cancer cells. The present invention provides significant advantages over the available tests for various cancers, such as colon cancer, because it increases the reliability of the test by providing an array of nucleic acid markers on a single chip.

10 The method includes obtaining a biopsy, which is optionally fractionated by cryostat sectioning to enrich tumor cells to about 80% of the total cell population. The DNA or RNA is then extracted, amplified, and analyzed with a DNA chip to determine the presence of absence of the marker nucleic acid sequences.

In one embodiment, the nucleic acid probes are spotted onto a substrate in a  
15 two-dimensional matrix or array. Samples of nucleic acids can be labeled and then hybridized to the probes. Double-stranded nucleic acids, comprising the labeled sample nucleic acids bound to probe nucleic acids, can be detected once the unbound portion of the sample is washed away.

The probe nucleic acids can be spotted on substrates including glass,  
20 nitrocellulose, etc. The probes can be bound to the substrate by either covalent bonds or by non-specific interactions, such as hydrophobic interactions. The sample nucleic acids can be labeled using radioactive labels, fluorophores, chromophores, etc.

Techniques for constructing arrays and methods of using these arrays are described in EP No. 0 799 897; PCT No. WO 97/29212; PCT No. WO 97/27317; EP  
25 No. 0 785 280; PCT No. WO 97/02357; U.S. Pat. No. 5,593,839; U.S. Pat. No. 5,578,832; EP No. 0 728 520; U.S. Pat. No. 5,599,695; EP No. 0 721 016; U.S. Pat. No. 5,556,752; PCT No. WO 95/22058; and U.S. Pat. No. 5,631,734.

Further, arrays can be used to examine differential expression of genes and can be used to determine gene function. For example, arrays of the instant nucleic acid  
30 sequences can be used to determine if any of the nucleic acid sequences are differentially expressed between normal cells and cancer cells, for example. High expression of a particular message in a cancer cell, which is not observed in a corresponding normal cell, can indicate a cancer specific protein.

In yet another embodiment, the invention contemplates using a panel of antibodies which are generated against the marker polypeptides of this invention, which polypeptides are encoded by SEQ ID Nos: 1-544. Such a panel of antibodies may be used as a reliable diagnostic probe for colon cancer. The assay of the present invention comprises contacting a biopsy sample containing cells, e.g., colon cells, with a panel of antibodies to one or more of the encoded products to determine the presence or absence of the marker polypeptides.

The diagnostic methods of the subject invention may also be employed as follow-up to treatment, e.g., quantitation of the level of marker polypeptides may be indicative of the effectiveness of current or previously employed cancer therapies as well as the effect of these therapies upon patient prognosis.

Accordingly, the present invention makes available diagnostic assays and reagents for detecting gain and/or loss of marker polypeptides from a cell in order to aid in the diagnosis and phenotyping of proliferative disorders arising from, for example, tumorigenic transformation of cells.

The diagnostic assays described above can be adapted to be used as prognostic assays, as well. Such an application takes advantage of the sensitivity of the assays of the invention to events which take place at characteristic stages in the progression of a tumor. For example, a given marker gene may be up- or downregulated at a very early stage, perhaps before the cell is irreversibly committed to developing into a malignancy, while another marker gene may be characteristically up or down regulated only at a much later stage. Such a method could involve the steps of contacting the mRNA of a test cell with a nucleic acid probe derived from a given marker nucleic acid which is expressed at different characteristic levels in cancerous or precancerous cells at different stages of tumor progression, and determining the approximate amount of hybridization of the probe to the mRNA of the cell, such amount being an indication of the level of expression of the gene in the cell, and thus an indication of the stage of tumor progression of the cell; alternatively, the assay can be carried out with an antibody specific for the gene product of the given marker nucleic acid, contacted with the proteins of the test cell. A battery of such tests will disclose not only the existence and location of a tumor, but also will allow the clinician to select the mode of treatment most appropriate for the tumor, and to predict the likelihood of success of that treatment.



The methods of the invention can also be used to follow the clinical course of a tumor. For example, the assay of the invention can be applied to a tissue sample from a patient; following treatment of the patient for the cancer, another tissue sample is taken and the test repeated. Successful treatment will result in either removal of all  
5 cells which demonstrate differential expression characteristic of the cancerous or precancerous cells, or a substantial increase in expression of the gene in those cells, perhaps approaching or even surpassing normal levels.

In yet another embodiment, the invention provides methods for determining whether a subject is at risk for developing a disease, such as a predisposition to  
10 develop cancer, for example colon cancer, associated with an aberrant activity of any one of the polypeptides encoded by nucleic acids of SEQ ID Nos: 1-544, wherein the aberrant activity of the polypeptide is characterized by detecting the presence or absence of a genetic lesion characterized by at least one of (i) an alteration affecting the integrity of a gene encoding a marker polypeptides, or (ii) the mis-expression of  
15 the encoding nucleic acid. To illustrate, such genetic lesions can be detected by ascertaining the existence of at least one of (i) a deletion of one or more nucleotides from the nucleic acid sequence, (ii) an addition of one or more nucleotides to the nucleic acid sequence, (iii) a substitution of one or more nucleotides of the nucleic acid sequence, (iv) a gross chromosomal rearrangement of the nucleic acid sequence,  
20 (v) a gross alteration in the level of a messenger RNA transcript of the nucleic acid sequence, (vii) aberrant modification of the nucleic acid sequence, such as of the methylation pattern of the genomic DNA, (vii) the presence of a non-wild type splicing pattern of a messenger RNA transcript of the gene, (viii) a non-wild type level of the marker polypeptide, (ix) allelic loss of the gene, and/or (x) inappropriate  
25 post-translational modification of the marker polypeptide.

The present invention provides assay techniques for detecting lesions in the encoding nucleic acid sequence. These methods include, but are not limited to, methods involving sequence analysis, Southern blot hybridization, restriction enzyme site mapping, and methods involving detection of absence of nucleotide pairing  
30 between the nucleic acid to be analyzed and a probe.

Specific diseases or disorders, e.g., genetic diseases or disorders, are associated with specific allelic variants of polymorphic regions of certain genes, which do not necessarily encode a mutated protein. Thus, the presence of a specific

allelic variant of a polymorphic region of a gene in a subject can render the subject susceptible to developing a specific disease or disorder. Polymorphic regions in genes, can be identified, by determining the nucleotide sequence of genes in populations of individuals. If a polymorphic region is identified, then the link with a specific disease can be determined by studying specific populations of individuals, e.g, individuals which developed a specific disease, such as colon cancer. A polymorphic region can be located in any region of a gene, e.g., exons, in coding or non coding regions of exons, introns, and promoter region.

In an exemplary embodiment, there is provided a nucleic acid composition comprising a nucleic acid probe including a region of nucleotide sequence which is capable of hybridizing to a sense or antisense sequence of a gene or naturally occurring mutants thereof, or 5' or 3' flanking sequences or intronic sequences naturally associated with the subject genes or naturally occurring mutants thereof. The nucleic acid of a cell is rendered accessible for hybridization, the probe is contacted with the nucleic acid of the sample, and the hybridization of the probe to the sample nucleic acid is detected. Such techniques can be used to detect lesions or allelic variants at either the genomic or mRNA level, including deletions, substitutions, etc., as well as to determine mRNA transcript levels.

A preferred detection method is allele specific hybridization using probes overlapping the mutation or polymorphic site and having about 5, 10, 20, 25, or 30 nucleotides around the mutation or polymorphic region. In a preferred embodiment of the invention, several probes capable of hybridizing specifically to allelic variants are attached to a solid phase support, e.g., a "chip". Mutation detection analysis using these chips comprising oligonucleotides, also termed "DNA probe arrays" is described e.g., in Cronin et al. (1996) Human Mutation 7:244. In one embodiment, a chip comprises all the allelic variants of at least one polymorphic region of a gene. The solid phase support is then contacted with a test nucleic acid and hybridization to the specific probes is detected. Accordingly, the identity of numerous allelic variants of one or more genes can be identified in a simple hybridization experiment.

In certain embodiments, detection of the lesion comprises utilizing the probe/primer in a polymerase chain reaction (PCR) (see, e.g. U.S. Patent Nos. 4,683,195 and 4,683,202), such as anchor PCR or RACE PCR, or, alternatively, in a ligase chain reaction (LCR) (see, e.g., Landegran *et al.* (1988) *Science* 241:1077-

1080; and Nakazawa *et al.* (1994) *PNAS* 91:360-364), the latter of which can be particularly useful for detecting point mutations in the gene (see Abravaya *et al.* (1995) *Nuc Acid Res* 23:675-682). In a merely illustrative embodiment, the method includes the steps of (i) collecting a sample of cells from a patient, (ii) isolating  
5 nucleic acid (e.g., genomic, mRNA or both) from the cells of the sample, (iii) contacting the nucleic acid sample with one or more primers which specifically hybridize to a nucleic acid sequence under conditions such that hybridization and amplification of the nucleic acid (if present) occurs, and (iv) detecting the presence or absence of an amplification product, or detecting the size of the amplification product  
10 and comparing the length to a control sample. It is anticipated that PCR and/or LCR may be desirable to use as a preliminary amplification step in conjunction with any of the techniques used for detecting mutations described herein.

Alternative amplification methods include: self sustained sequence replication (Guatelli, J.C. *et al.*, 1990, *Proc. Natl. Acad. Sci. USA* 87:1874-1878), transcriptional  
15 amplification system (Kwoh, D.Y. *et al.*, 1989, *Proc. Natl. Acad. Sci. USA* 86:1173-1177), Q-Beta Replicase (Lizardi, P.M. *et al.*, 1988, *Bio/Technology* 6:1197), or any other nucleic acid amplification method, followed by the detection of the amplified molecules using techniques well known to those of skill in the art. These detection schemes are especially useful for the detection of nucleic acid molecules if such  
20 molecules are present in very low numbers.

In a preferred embodiment of the subject assay, mutations in, or allelic variants, of a gene from a sample cell are identified by alterations in restriction enzyme cleavage patterns. For example, sample and control DNA is isolated, amplified (optionally), digested with one or more restriction endonucleases, and  
25 fragment length sizes are determined by gel electrophoresis. Moreover, the use of sequence specific ribozymes (see, for example, U.S. Patent No. 5,498,531) can be used to score for the presence of specific mutations by development or loss of a ribozyme cleavage site.

Another aspect of the invention is directed to the identification of agents  
30 capable of modulating the differentiation and proliferation of cells characterized by aberrant proliferation. In this regard, the invention provides assays for determining compounds that modulate the expression of the marker nucleic acids (SEQ ID Nos: 1-544) and/or alter for example, inhibit the bioactivity of the encoded polypeptide.

Several in vivo methods can be used to identify compounds that modulate expression of the marker nucleic acids (SEQ ID Nos: 1-544) and/or alter for example, inhibit the bioactivity of the encoded polypeptide.

Drug screening is performed by adding a test compound to a sample of cells, and monitoring the effect. A parallel sample which does not receive the test compound is also monitored as a control. The treated and untreated cells are then compared by any suitable phenotypic criteria, including but not limited to microscopic analysis, viability testing, ability to replicate, histological examination, the level of a particular RNA or polypeptide associated with the cells, the level of enzymatic activity expressed by the cells or cell lysates, and the ability of the cells to interact with other cells or compounds. Differences between treated and untreated cells indicates effects attributable to the test compound.

Desirable effects of a test compound include an effect on any phenotype that was conferred by the cancer-associated marker nucleic acid sequence. Examples include a test compound that limits the overabundance of mRNA, limits production of the encoded protein, or limits the functional effect of the protein. The effect of the test compound would be apparent when comparing results between treated and untreated cells.

The invention thus also encompasses methods of screening for agents which inhibit expression of the nucleic acid markers (SEQ ID Nos: 1-544) in vitro, comprising exposing a cell or tissue in which the marker nucleic acid mRNA is detectable in cultured cells to an agent in order to determine whether the agent is capable of inhibiting production of the mRNA; and determining the level of mRNA in the exposed cells or tissue, wherein a decrease in the level of the mRNA after exposure of the cell line to the agent is indicative of inhibition of the marker nucleic acid mRNA production.

Alternatively, the screening method may include in vitro screening of a cell or tissue in which marker protein is detectable in cultured cells to an agent suspected of inhibiting production of the marker protein; and determining the level of the marker protein in the cells or tissue, wherein a decrease in the level of marker protein after exposure of the cells or tissue to the agent is indicative of inhibition of marker protein production.

The invention also encompasses in vivo methods of screening for agents which inhibit expression of the marker nucleic acids, comprising exposing a mammal having tumor cells in which marker mRNA or protein is detectable to an agent suspected of inhibiting production of marker mRNA or protein; and determining the  
5 level of marker mRNA or protein in tumor cells of the exposed mammal. A decrease in the level of marker mRNA or protein after exposure of the mammal to the agent is indicative of inhibition of marker nucleic acid expression.

Accordingly, the invention provides a method comprising incubating a cell expressing the marker nucleic acids (SEQ ID Nos: 1-544) with a test compound and  
10 measuring the mRNA or protein level. The invention further provides a method for quantitatively determining the level of expression of the marker nucleic acids in a cell population, and a method for determining whether an agent is capable of increasing or decreasing the level of expression of the marker nucleic acids in a cell population. The method for determining whether an agent is capable of increasing or decreasing  
15 the level of expression of the marker nucleic acids in a cell population comprises the steps of (a) preparing cell extracts from control and agent-treated cell populations, (b) isolating the marker polypeptides from the cell extracts, (c) quantifying (e.g., in parallel) the amount of an immunocomplex formed between the marker polypeptide and an antibody specific to said polypeptide. The marker polypeptides of this  
20 invention may also be quantified by assaying for its bioactivity. Agents that induce increased the marker nucleic acid expression may be identified by their ability to increase the amount of immunocomplex formed in the treated cell as compared with the amount of the immunocomplex formed in the control cell. In a similar manner, agents that decrease expression of the marker nucleic acid may be identified by their  
25 ability to decrease the amount of the immunocomplex formed in the treated cell extract as compared to the control cell.

mRNA levels can be determined by Northern blot hybridization. mRNA levels can also be determined by methods involving PCR. Other sensitive methods for measuring mRNA, which can be used in high throughput assays, e.g., a method using  
30 a DELFIA endpoint detection and quantification method, are described, e.g., in Webb and Hurskainen (1996) *Journal of Biomolecular Screening* 1:119. Marker protein levels can be determined by immunoprecipitations or immunohistochemistry using an

antibody that specifically recognizes the protein product encoded by SEQ ID Nos: 1-544.

Agents that are identified as active in the drug screening assay are candidates to be tested for their capacity to block cell proliferation activity. These agents would be useful for treating a disorder involving aberrant growth of cells, especially colon cells.

A variety of assay formats will suffice and, in light of the present disclosure, those not expressly described herein will nevertheless be comprehended by one of ordinary skill in the art. For instance, the assay can be generated in many different formats, and include assays based on cell-free systems, e.g., purified proteins or cell lysates, as well as cell-based assays which utilize intact cells.

In many drug screening programs which test libraries of compounds and natural extracts, high throughput assays are desirable in order to maximize the number of compounds surveyed in a given period of time. Assays of the present invention which are performed in cell-free systems, such as may be derived with purified or semi-purified proteins or with lysates, are often preferred as "primary" screens in that they can be generated to permit rapid development and relatively easy detection of an alteration in a molecular target which is mediated by a test compound. Moreover, the effects of cellular toxicity and/or bioavailability of the test compound can be generally ignored in the *in vitro* system, the assay instead being focused primarily on the effect of the drug on the molecular target as may be manifest in an alteration of binding affinity with other proteins or changes in enzymatic properties of the molecular target.

A. Use of Nucleic Acids as Probes in Mapping and in Tissue Profiling Probes

Polynucleotide probes as described above, e.g., comprising at least 12 contiguous nucleotides selected from the nucleotide sequence of a nucleic acid as shown in SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, are used for a variety of purposes, including identification of human chromosomes and determining transcription levels. Additional disclosure about preferred regions of the nucleic acid sequences is found in the accompanying tables.

The nucleotide probes are labeled, for example, with a radioactive, fluorescent, biotinylated, or chemiluminescent label, and detected by well known methods appropriate for the particular label selected. Protocols for hybridizing nucleotide probes to preparations of metaphase chromosomes are also well known in the art. A  
5 nucleotide probe will hybridize specifically to nucleotide sequences in the chromosome preparations which are complementary to the nucleotide sequence of the probe. A probe that hybridizes specifically to a nucleic acid should provide a detection signal at least 5-, 10-, or 20-fold higher than the background hybridization provided with other unrelated sequences.

10 In a non-limiting example, commercial programs are available for identifying regions of chromosomes commonly associated with disease, such as cancer. Nucleic acids of the invention can be used to probe these regions. For example, if, through profile searching, a nucleic acid is identified as corresponding to a gene encoding a kinase, its ability to bind to a cancer-related chromosomal region will suggest its role  
15 as a kinase in one or more stages of tumor cell development/growth. Although some experimentation would be required to elucidate the role, the nucleic acid constitutes a new material for isolating a specific protein that has potential for developing a cancer diagnostic or therapeutic.

Nucleotide probes are used to detect expression of a gene corresponding to the  
20 nucleic acid. For example, in Northern blots, mRNA is separated electrophoretically and contacted with a probe. A probe is detected as hybridizing to an mRNA species of a particular size. The amount of hybridization is quantitated to determine relative amounts of expression, for example under a particular condition. Probes are also used to detect products of amplification by polymerase chain reaction. The products of the  
25 reaction are hybridized to the probe and hybrids are detected. Probes are used for in situ hybridization to cells to detect expression. Probes can also be used in vivo for diagnostic detection of hybridizing sequences. Probes are typically labeled with a radioactive isotope. Other types of detectable labels may be used such as chromophores, fluorophores, and enzymes.

30 Expression of specific mRNA can vary in different cell types and can be tissue specific. This variation of mRNA levels in different cell types can be exploited with nucleic acid probe assays to determine tissue types. For example, PCR, branched DNA probe assays, or blotting techniques utilizing nucleic acid probes substantially

identical or complementary to nucleic acids of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, can determine the presence or absence of target cDNA or mRNA.

5           Examples of a nucleotide hybridization assay are described in Urdea *et al.*, PCT WO92/02526 and Urdea *et al.*, U.S. Patent No. 5,124,246, both incorporated herein by reference. The references describe an example of a sandwich nucleotide hybridization assay.

10           Alternatively, the Polymerase Chain Reaction (PCR) is another means for detecting small amounts of target nucleic acids, as described in Mullis *et al.*, *Meth. Enzymol.* (1987) 155:335-350; U.S. Patent No. 4,683,195; and U.S. Patent No. 4,683,202, all incorporated herein by reference. Two primer polynucleotides nucleotides hybridize with the target nucleic acids and are used to prime the reaction. The primers may be composed of sequence within or 3' and 5' to the polynucleotides  
15 of the Sequence Listing. Alternatively, if the primers are 3' and 5' to these polynucleotides, they need not hybridize to them or the complements. A thermostable polymerase creates copies of target nucleic acids from the primers using the original target nucleic acids as a template. After a large amount of target nucleic acids is generated by the polymerase, it is detected by methods such as Southern blots. When  
20 using the Southern blot method, the labeled probe will hybridize to a polynucleotide of the Sequence Listing or complement.

          Furthermore, mRNA or cDNA can be detected by traditional blotting techniques described in Sambrook *et al.*, "Molecular Cloning: A Laboratory Manual" (New York, Cold Spring Harbor Laboratory, 1989). mRNA or cDNA generated from  
25 mRNA using a polymerase enzyme can be purified and separated using gel electrophoresis. The nucleic acids on the gel are then blotted onto a solid support, such as nitrocellulose. The solid support is exposed to a labeled probe and then washed to remove any unhybridized probe. Next, the duplexes containing the labeled probe are detected. Typically, the probe is labeled with radioactivity.

30

#### Mapping

Nucleic acids of the present invention are used to identify a chromosome on which the corresponding gene resides. Using fluorescence in situ hybridization



(FISH) on normal metaphase spreads, comparative genomic hybridization allows total genome assessment of changes in relative copy number of DNA sequences. See Schwartz and Samad, *Current Opinions in Biotechnology* (1994) 8:70-74; Kallioniemi *et al.*, *Seminars in Cancer Biology* (1993) 4:41-46; Valdes and Tagle, *Methods in Molecular Biology* (1997) 68:1, Boultonwood, ed., Human Press, Totowa, NJ.

Preparations of human metaphase chromosomes are prepared using standard cytogenetic techniques from human primary tissues or cell lines. Nucleotide probes comprising at least 12 contiguous nucleotides selected from the nucleotide sequence of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, are used to identify the corresponding chromosome. The nucleotide probes are labeled, for example, with a radioactive, fluorescent, biotinylated, or chemiluminescent label, and detected by well known methods appropriate for the particular label selected. Protocols for hybridizing nucleotide probes to preparations of metaphase chromosomes are also well known in the art. A nucleotide probe will hybridize specifically to nucleotide sequences in the chromosome preparations that are complementary to the nucleotide sequence of the probe. A probe that hybridizes specifically to a target gene provides a detection signal at least 5-, 10-, or 20-fold higher than the background hybridization provided with unrelated coding sequences.

Nucleic acids are mapped to particular chromosomes using, for example, radiation hybrids or chromosome-specific hybrid panels. See Leach *et al.*, *Advances in Genetics*, (1995) 33:63-99; Walter *et al.*, *Nature Genetics* (1994) 7:22-28; Walter and Goodfellow, *Trends in Genetics* (1992) 9:352. Panels for radiation hybrid mapping are available from Research Genentics, Inc., Huntsville, Alabama, USA. Databases for markers using various panels are available via the world wide web at <http://F/shgc-www.stanford.edu>; and other locations. The statistical program RHMAP can be used to construct a map based on the data from radiation hybridization with a measure of the relative likelihood of one order versus another. RHMAP is available via the world wide web at <http://www.sph.umich.edu/group/statgen/software>.

Such mapping can be useful in identifying the function of the target gene by its proximity to other genes with known function. Function can also be assigned to the target gene when particular syndromes or diseases map to the same chromosome.

### Tissue Profiling

The nucleic acids of the present invention can be used to determine the tissue type from which a given sample is derived. For example, a metastatic lesion is identified by its developmental organ or tissue source by identifying the expression of a particular marker of that organ or tissue. If a nucleic acid is expressed only in a specific tissue type, and a metastatic lesion is found to express that-nucleic acid, then the developmental source of the lesion has been identified. Expression of a particular nucleic acid is assayed by detection of either the corresponding mRNA or the protein product. Immunological methods, such as antibody staining, are used to detect a particular protein product. Hybridization methods may be used to detect particular mRNA species, including but not limited to in situ hybridization and Northern blotting.

### Use of Polymorphisms

A nucleic acid will be useful in forensics, genetic analysis, mapping, and diagnostic applications if the corresponding region of a gene is polymorphic in the human population. A particular polymorphic form of the nucleic acid may be used to either identify a sample as deriving from a suspect or rule out the possibility that the sample derives from the suspect. Any means for detecting a polymorphism in a gene are used, including but not limited to electrophoresis of protein polymorphic variants, differential sensitivity to restriction enzyme cleavage, and hybridization to an allele-specific probe.

### B. Use of Nucleic Acids and Encoded Polypeptides to Raise Antibodies

Expression products of a nucleic acid, the corresponding mRNA or cDNA, or the corresponding complete gene are prepared and used for raising antibodies for experimental, diagnostic, and therapeutic purposes. For nucleic acids to which a corresponding gene has not been assigned, this provides an additional method of identifying the corresponding gene. The nucleic acid or related cDNA is expressed as described above, and antibodies are prepared. These antibodies are specific to an epitope on the encoded polypeptide, and can precipitate or bind to the corresponding native protein in a cell or tissue preparation or in a cell-free extract of an in vitro expression system.

Immunogens for raising antibodies are prepared by mixing the polypeptides encoded by the nucleic acids of the present invention with adjuvants. Alternatively, polypeptides are made as fusion proteins to larger immunogenic proteins.

Polypeptides are also covalently linked to other larger immunogenic proteins, such as  
5 keyhole limpet hemocyanin. Immunogens are typically administered intradermally, subcutaneously, or intramuscularly. Immunogens are administered to experimental animals such as rabbits, sheep, and mice, to generate antibodies. Optionally, the animal spleen cells are isolated and fused with myeloma cells to form hybridomas which secrete monoclonal antibodies. Such methods are well known in the art.  
10 According to another method known in the art, the nucleic acid is administered directly, such as by intramuscular injection, and expressed in vivo. The expressed protein generates a variety of protein-specific immune responses, including production of antibodies, comparable to administration of the protein.

Preparations of polyclonal and monoclonal antibodies specific for nucleic  
15 acid-encoded proteins and polypeptides are made using standard methods known in the art. The antibodies specifically bind to epitopes present in the polypeptides encoded by a nucleic acid of SEQ ID Nos. 1-544, preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto. In another embodiment, the antibodies specifically bind to epitopes present in a polypeptide  
20 encoded by SEQ ID Nos. 1-544. Typically, at least about 6, 8, 10, or 12 contiguous amino acids are required to form an epitope. However, epitopes which involve non-contiguous amino acids may require more, for example, at least about 15, 25, or 50 amino acids. A short sequence of a nucleic acid may then be unsuitable for use as an epitope to raise antibodies for identifying the corresponding novel protein, because of  
25 the potential for cross-reactivity with a known protein. However, the antibodies may be useful for other purposes, particularly if they identify common structural features of a known protein and a novel polypeptide encoded by a nucleic acid of the invention.

Antibodies that specifically bind to human nucleic acid-encoded polypeptides  
30 should provide a detection signal at least about 5-, 10-, or 20-fold higher than a detection signal provided with other proteins when used in Western blots or other immunochemical assays. Preferably, antibodies that specifically bind nucleic acid T-

encoded polypeptides do not detect other proteins in immunochemical assays and can immunoprecipitate nucleic acid-encoded proteins from solution.

To test for the presence of serum antibodies to the nucleic acid-encoded polypeptide in a human population, human antibodies are purified by methods well known in the art. Preferably, the antibodies are affinity purified by passing antiserum over a column to which a nucleic acid-encoded protein, polypeptide, or fusion protein is bound. The bound antibodies can then be eluted from the column, for example using a buffer with a high salt concentration.

In addition to the antibodies discussed above, genetically engineered antibody derivatives are made, such as single chain antibodies.

Antibodies may be made by using standard protocols known in the art (See, for example, Antibodies: A Laboratory Manual ed. by Harlow and Lane (Cold Spring Harbor Press: 1988)). A mammal, such as a mouse, hamster, or rabbit can be immunized with an immunogenic form of the peptide (e.g., a mammalian polypeptide or an antigenic fragment which is capable of eliciting an antibody response, or a fusion protein as described above).

In one aspect, this invention includes monoclonal antibodies that show a subject polypeptide is highly expressed in colorectal tissue or tumor tissue, especially colon cancer tissue or colon cancer-derived cell lines. Therefore, in one embodiment, this invention provides a diagnostic tool for the analysis of expression of a subject polypeptide in general, and in particular, as a diagnostic for colon cancer.

Techniques for conferring immunogenicity on a protein or peptide include conjugation to carriers or other techniques well known in the art. An immunogenic portion of a protein can be administered in the presence of adjuvant. The progress of immunization can be monitored by detection of antibody titers in plasma or serum. Standard ELISA or other immunoassays can be used with the immunogen as antigen to assess the levels of antibodies. In a preferred embodiment, the subject antibodies are immunospecific for antigenic determinants of a protein of a mammal, e.g., antigenic determinants of a protein encoded by one of SEQ ID Nos. 1-544 or closely related homologs (e.g., at least 90% identical, and more preferably at least 95% identical).

Following immunization of an animal with an antigenic preparation of a polypeptide, antisera can be obtained and, if desired, polyclonal antibodies isolated

from the serum. To produce monoclonal antibodies, antibody-producing cells (lymphocytes) can be harvested from an immunized animal and fused by standard somatic cell fusion procedures with immortalizing cells such as myeloma cells to yield hybridoma cells. Such techniques are well known in the art, and include, for example, the hybridoma technique (originally developed by Kohler and Milstein, (1975) *Nature*, 256: 495-497), the human B cell hybridoma technique (Kozbar *et al.*, (1983) *Immunology Today*, 4: 72), and the EBV-hybridoma technique to produce human monoclonal antibodies (Cole *et al.*, (1985) *Monoclonal Antibodies and Cancer Therapy*, Alan R. Liss, Inc. pp. 77-96). Hybridoma cells can be screened immunochemically for production of antibodies specifically reactive with a polypeptide of the present invention and monoclonal antibodies isolated from a culture comprising such hybridoma cells.

The term antibody as used herein is intended to include fragments thereof which are also specifically reactive with one of the subject polypeptides. Antibodies can be fragmented using conventional techniques and the fragments screened for utility in the same manner as described above for whole antibodies. For example, F(ab)<sub>2</sub> fragments can be generated by treating antibody with pepsin. The resulting F(ab)<sub>2</sub> fragment can be treated to reduce disulfide bridges to produce Fab fragments. The antibody of the present invention is further intended to include bispecific, single-chain, and chimeric and humanized molecules having affinity for a polypeptide conferred by at least one CDR region of the antibody. In preferred embodiments, the antibodies, the antibody further comprises a label attached thereto and able to be detected, (e.g., the label can be a radioisotope, fluorescent compound, chemiluminescent compound, enzyme, or enzyme co-factor).

Antibodies can be used, e.g., to monitor protein levels in an individual for determining, e.g., whether a subject has a disease or condition, such as colon cancer, associated with an aberrant protein level, or allowing determination of the efficacy of a given treatment regimen for an individual afflicted with such a disorder. The level of polypeptides may be measured from cells in bodily fluid, such as in blood samples.

Another application of antibodies of the present invention is in the immunological screening of cDNA libraries constructed in expression vectors such as gt11, gt18-23, ZAP, and ORF8. Messenger libraries of this type, having coding sequences inserted in the correct reading frame and orientation, can produce fusion

proteins. For instance, gtl1 will produce fusion proteins whose amino termini consist of  $\beta$ -galactosidase amino acid sequences and whose carboxyl termini consist of a foreign polypeptide. Antigenic epitopes of a protein, e.g., other orthologs of a particular protein or other paralogs from the same species, can then be detected with  
5 antibodies, as, for example, reacting nitrocellulose filters lifted from infected plates with antibodies. Positive phage detected by this assay can then be isolated from the infected plate. Thus, the presence of homologs can be detected and cloned from other animals, as can alternate isoforms (including splicing variants) from humans.

In another embodiment, a panel of monoclonal antibodies may be used,  
10 wherein each of the epitope's involved functions are represented by a monoclonal antibody. Loss or perturbation of binding of a monoclonal antibody in the panel would be indicative of a mutational alteration of the protein and thus of the corresponding gene.

15 C. Differential Expression

The present invention also provides a method to identify abnormal or diseased tissue in a human. For nucleic acids corresponding to profiles of protein families as described above, the choice of tissue may be dictated by the putative biological function. The expression of a gene corresponding to a specific nucleic acid is  
20 compared between a first tissue that is suspected of being diseased and a second, normal tissue of the human. The normal tissue is any tissue of the human, especially those that express the target gene including, but not limited to, brain, thymus, testis, heart, prostate, placenta, spleen, small intestine, skeletal muscle, pancreas, and the mucosal lining of the colon.

25 The tissue suspected of being abnormal or diseased can be derived from a different tissue type of the human, but preferably it is derived from the same tissue type; for example an intestinal polyp or other abnormal growth should be compared with normal intestinal tissue. A difference between the target gene, mRNA, or protein in the two tissues which are compared, for example in molecular weight, amino acid  
30 or nucleotide sequence, or relative abundance, indicates a change in the gene, or a gene which regulates it, in the tissue of the human that was suspected of being diseased.

The target genes in the two tissues are compared by any means known in the art. For example, the two genes are sequenced, and the sequence of the gene in the tissue suspected of being diseased is compared with the gene sequence in the normal tissue. The target genes, or portions thereof, in the two tissues are amplified, for  
5 example using nucleotide primers based on the nucleotide sequence shown in the Sequence Listing, using the polymerase chain reaction. The amplified genes or portions of genes are hybridized to nucleotide probes selected from a corresponding nucleotide sequence shown SEQ ID No. 1-544. A difference in the nucleotide sequence of the target gene in the tissue suspected of being diseased compared with  
10 the normal nucleotide sequence suggests a role of the nucleic acid-encoded proteins in the disease, and provides a lead for preparing a therapeutic agent. The nucleotide probes are labeled by a variety of methods, such as radiolabeling, biotinylation, or labeling with fluorescent or chemiluminescent tags, and detected by standard methods known in the art.

15 Alternatively, target mRNA in the two tissues is compared. PolyA<sup>+</sup> RNA is isolated from the two tissues as is known in the art. For example, one of skill in the art can readily determine differences in the size or amount of target mRNA transcripts between the two tissues using Northern blots and nucleotide probes selected from the nucleotide sequence shown in the Sequence Listing. Increased or decreased  
20 expression of a target mRNA in a tissue sample suspected of being diseased, compared with the expression of the same target mRNA in a normal tissue, suggests that the expressed protein has a role in the disease, and also provides a lead for preparing a therapeutic agent.

Any method for analyzing proteins is used to compare two nucleic acid-  
25 encoded proteins from matched samples. The sizes of the proteins in the two tissues are compared, for example, using antibodies of the present invention to detect nucleic acid-encoded proteins in Western blots of protein extracts from the two tissues. Other changes, such as expression levels and subcellular localization, can also be detected immunologically, using antibodies to the corresponding protein. A higher or lower  
30 level of nucleic acid-encoded protein expression in a tissue suspected of being diseased, compared with the same nucleic acid-encoded protein expression level in a normal tissue, is indicative that the expressed protein has a role in the disease, and provides another lead for preparing a therapeutic agent.

Similarly, comparison of gene sequences or of gene expression products, e.g., mRNA and protein, between a human tissue that is suspected of being diseased and a normal tissue of a human, are used to follow disease progression or remission in the human. Such comparisons of genes, mRNA, or protein are made as described above.

5 For example, increased or decreased expression of the target gene in the tissue suspected of being neoplastic can indicate the presence of neoplastic cells in the tissue. The degree of increased expression of the target gene in the neoplastic tissue relative to expression of the gene in normal tissue, or differences in the amount of increased expression of the target gene in the neoplastic tissue over time, is used to  
10 assess the progression of the neoplasia in that tissue or to monitor the response of the neoplastic tissue to a therapeutic protocol over time.

The expression pattern of any two cell types can be compared, such as low and high metastatic tumor cell lines, or cells from tissue which have and have not been exposed to a therapeutic agent. A genetic predisposition to disease in a human is  
15 detected by comparing an target gene, mRNA, or protein in a fetal tissue with a normal target gene, mRNA, or protein. Fetal tissues that are used for this purpose include, but are not limited to, amniotic fluid, chorionic villi, blood, and the blastomere of an in vitro-fertilized embryo. The comparable normal target gene is obtained from any tissue. The mRNA or protein is obtained from a normal tissue of a  
20 human in which the target gene is expressed. Differences such as alterations in the nucleotide sequence or size of the fetal target gene or mRNA, or alterations in the molecular weight, amino acid sequence, or relative abundance of fetal target protein, can indicate a germline mutation in the target gene of the fetus, which indicates a genetic predisposition to disease.

25

D. Use of Nucleic Acids, and Encoded Polypeptides to Screen for Peptide Analogs and Antagonists

Polypeptides encoded by the instant nucleic acids, e.g., SEQ ID Nos. 1-544,  
30 preferably SEQ ID Nos. 1-168, even more preferably SEQ ID Nos. 1-35, or a sequence complementary thereto, and corresponding full length genes can be used to screen peptide libraries to identify binding partners, such as receptors, from among the encoded polypeptides.



A library of peptides may be synthesized following the methods disclosed in U.S. Pat. No. 5,010,175, and in PCT WO 91/17823. As described below in brief, one prepares a mixture of peptides, which is then screened to identify the peptides exhibiting the desired signal transduction and receptor binding activity. In the '175 method, a suitable peptide synthesis support (e.g., a resin) is coupled to a mixture of appropriately protected, activated amino acids. The concentration of each amino acid in the reaction mixture is balanced or adjusted in inverse proportion to its coupling reaction rate so that the product is an equimolar mixture of amino acids coupled to the starting resin. The bound amino acids are then deprotected, and reacted with another balanced amino acid mixture to form an equimolar mixture of all possible dipeptides. This process is repeated until a mixture of peptides of the desired length (e.g., hexamers) is formed. Note that one need not include all amino acids in each step: one may include only one or two amino acids in some steps (e.g., where it is known that a particular amino acid is essential in a given position), thus reducing the complexity of the mixture. After the synthesis of the peptide library is completed, the mixture of peptides is screened for binding to the selected polypeptide. The peptides are then tested for their ability to inhibit or enhance activity. Peptides exhibiting the desired activity are then isolated and sequenced.

The method described in WO 91/17823 is similar. However, instead of reacting the synthesis resin with a mixture of activated amino acids, the resin is divided into twenty equal portions (or into a number of portions corresponding to the number of different amino acids to be added in that step), and each amino acid is coupled individually to its portion of resin. The resin portions are then combined, mixed, and again divided into a number of equal portions for reaction with the second amino acid. In this manner, each reaction may be easily driven to completion. Additionally, one may maintain separate "subpools" by treating portions in parallel, rather than combining all resins at each step. This simplifies the process of determining which peptides are responsible for any observed receptor binding or signal transduction activity.

In such cases, the subpools containing, e.g., 1-2,000 candidates each are exposed to one or more polypeptides of the invention. Each subpool that produces a positive result is then resynthesized as a group of smaller subpools (sub-subpools) containing, e.g., 20-100 candidates, and reassayed. Positive sub-subpools may be

resynthesized as individual compounds, and assayed finally to determine the peptides that exhibit a high binding constant. These peptides can be tested for their ability to inhibit or enhance the native activity. The methods described in WO 91/7823 and U.S. Patent No. 5,194,392 (herein incorporated by reference) enable the preparation of  
5 such pools and subpools by automated techniques in parallel, such that all synthesis and resynthesis may be performed in a matter of days.

Peptide agonists or antagonists are screened using any available method, such as signal transduction, antibody binding, receptor binding, mitogenic assays, chemotaxis assays, etc. The methods described herein are presently preferred. The  
10 assay conditions ideally should resemble the conditions under which the native activity is exhibited *in vivo*, that is, under physiologic pH, temperature, and ionic strength. Suitable agonists or antagonists will exhibit strong inhibition or enhancement of the native activity at concentrations that do not cause toxic side effects in the subject. Agonists or antagonists that compete for binding to the native  
15 polypeptide may require concentrations equal to or greater than the native concentration, while inhibitors capable of binding irreversibly to the polypeptide may be added in concentrations on the order of the native concentration.

The end results of such screening and experimentation will be at least one novel polypeptide binding partner, such as a receptor, encoded by a nucleic acid of the  
20 invention, and at least one peptide agonist or antagonist of the novel binding partner. Such agonists and antagonists can be used to modulate, enhance, or inhibit receptor function in cells to which the receptor is native, or in cells that possess the receptor as a result of genetic engineering. Further, if the novel receptor shares biologically important characteristics with a known receptor, information about agonist/antagonist  
25 binding may help in developing improved agonists/antagonists of the known receptor.

#### E. Pharmaceutical Compositions and Therapeutic Uses

Pharmaceutical compositions can comprise polypeptides, antibodies, or polynucleotides of the claimed invention. The pharmaceutical compositions will  
30 comprise a therapeutically effective amount of either polypeptides, antibodies, or polynucleotides of the claimed invention.

The term "therapeutically effective amount" as used herein refers to an amount of a therapeutic agent to treat, ameliorate, or prevent a desired disease or condition, or

to exhibit a detectable therapeutic or preventative effect. The effect can be detected by, for example, chemical markers or antigen levels. Therapeutic effects also include reduction in physical symptoms, such as decreased body temperature. The precise effective amount for a subject will depend upon the subject's size and health, the  
5 nature and extent of the condition, and the therapeutics or combination of therapeutics selected for administration. Thus, it is not useful to specify an exact effective amount in advance. However, the effective amount for a given situation can be determined by routine experimentation and is within the judgment of the clinician.

For purposes of the present invention, an effective dose will be from about  
10 0.01 mg/kg to 50 mg/kg or 0.05 mg/kg to about 10 mg/kg of the DNA constructs in the individual to which it is administered.

A pharmaceutical composition can also contain a pharmaceutically acceptable carrier. The term "pharmaceutically acceptable carrier" refers to a carrier for administration of a therapeutic agent, such as antibodies or a polypeptide, genes, and  
15 other therapeutic agents. The term refers to any pharmaceutical carrier that does not itself induce the production of antibodies harmful to the individual receiving the composition, and which may be administered without undue toxicity. Suitable carriers may be large, slowly metabolized macromolecules such as proteins, polysaccharides, polylactic acids, polyglycolic acids, polymeric amino acids, amino  
20 acid copolymers, and inactive virus particles. Such carriers are well known to those of ordinary skill in the art.

Pharmaceutically acceptable salts can be used therein, for example, mineral acid salts such as hydrochlorides, hydrobromides, phosphates, sulfates, and the like; and the salts of organic acids such as acetates, propionates, malonates, benzoates, and  
25 the like. A thorough discussion of pharmaceutically acceptable excipients is available in *Remington's Pharmaceutical Sciences* (Mack Pub. Co., N.J. 1991).

Pharmaceutically acceptable carriers in therapeutic compositions may contain liquids such as water, saline, glycerol and ethanol. Additionally, auxiliary substances, such as wetting or emulsifying agents, pH buffering substances, and the like, may be  
30 present in such vehicles. Typically, the therapeutic compositions are prepared as injectables, either as liquid solutions or suspensions; solid forms suitable for solution in, or suspension in, liquid vehicles prior to injection may also be prepared. Liposomes are included within the definition of a pharmaceutically acceptable carrier.

### Delivery Methods

Once formulated, the nucleic acid compositions of the invention can be (1) administered directly to the subject; (2) delivered ex vivo, to cells derived from the  
5 subject; or (3) delivered in vitro for expression of recombinant proteins.

Direct delivery of the compositions will generally be accomplished by injection, either subcutaneously, intraperitoneally, intravenously or intramuscularly, or delivered to the interstitial space of a tissue. The compositions can also be administered into a tumor or lesion. Other modes of administration include oral and  
10 pulmonary administration, suppositories, and transdermal applications, needles, and gene guns or hyposprays. Dosage treatment may be a single dose schedule or a multiple dose schedule.

Methods for the ex vivo delivery and reimplantation of transformed cells into a subject are known in the art and described in e.g., International Publication No. WO  
15 93/14778. Examples of cells useful in ex vivo applications include, for example, stem cells, particularly hematopoietic, lymph cells, macrophages, dendritic cells, or tumor cells.

Generally, delivery of nucleic acids for both ex vivo and in vitro applications can be accomplished by, for example, dextran-mediated transfection, calcium  
20 phosphate precipitation, polybrene mediated transfection, protoplast fusion, electroporation, encapsulation of the polynucleotide(s) in liposomes, and direct microinjection of the DNA into nuclei, all well known in the art.

Once a subject gene has been found to correlate with a proliferative disorder, such as neoplasia, dysplasia, and hyperplasia, the disorder may be amenable to  
25 treatment by administration of a therapeutic agent based on the nucleic acid or corresponding polypeptide.

Preparation of antisense polypeptides is discussed above. Neoplasias that are treated with the antisense composition include, but are not limited to, cervical cancers, melanomas, colorectal adenocarcinomas, Wilms' tumor, retinoblastoma, sarcomas,  
30 myosarcomas, lung carcinomas, leukemias, such as chronic myelogenous leukemia, promyelocytic leukemia, monocytic leukemia, and myeloid leukemia, and lymphomas, such as histiocytic lymphoma. Proliferative disorders that are treated with the therapeutic composition include disorders such as anhydric hereditary

ectodermal dysplasia, congenital alveolar dysplasia, epithelial dysplasia of the cervix, fibrous dysplasia of bone, and mammary dysplasia. Hyperplasias, for example, endometrial, adrenal, breast, prostate, or thyroid hyperplasias or pseudoepitheliomatous hyperplasia of the skin, are treated with antisense therapeutic compositions. Even in disorders in which mutations in the corresponding gene are not implicated, downregulation or inhibition of nucleic acid-related gene expression can have therapeutic application. For example, decreasing nucleic acid-related gene expression can help to suppress tumors in which enhanced expression of the gene is implicated.

Both the dose of the antisense composition and the means of administration are determined based on the specific qualities of the therapeutic composition, the condition, age, and weight of the patient, the progression of the disease, and other relevant factors. Administration of the therapeutic antisense agents of the invention includes local or systemic administration, including injection, oral administration, particle gun or catheterized administration, and topical administration. Preferably, the therapeutic antisense composition contains an expression construct comprising a promoter and a polynucleotide segment of at least about 12, 22, 25, 30, or 35 contiguous nucleotides of the antisense strand of a nucleic acid. Within the expression construct, the polynucleotide segment is located downstream from the promoter, and transcription of the polynucleotide segment initiates at the promoter.

Various methods are used to administer the therapeutic composition directly to a specific site in the body. For example, a small metastatic lesion is located and the therapeutic composition injected several times in several different locations within the body of tumor. Alternatively, arteries which serve a tumor are identified, and the therapeutic composition injected into such an artery, in order to deliver the composition directly into the tumor. A tumor that has a necrotic center is aspirated and the composition injected directly into the now empty center of the tumor. The antisense composition is directly administered to the surface of the tumor, for example, by topical application of the composition. X-ray imaging is used to assist in certain of the above delivery methods.

Receptor-mediated targeted delivery of therapeutic compositions containing an antisense polynucleotide, subgenomic polynucleotides, or antibodies to specific tissues is also used. Receptor-mediated DNA delivery techniques are described in, for

example, Findeis *et al.*, *Trends in Biotechnol.* (1993) 11:202-205; Chiou *et al.*, (1994) *Gene Therapeutics: Methods And Applications Of Direct Gene Transfer* (J.A. Wolff, ed.); Wu & Wu, *J. Biol. Chem.* (1988) 263:621-24; Wu *et al.*, *J. Biol. Chem.* (1994) 269:542-46; Zenke *et al.*, *Proc. Natl. Acad. Sci. (USA)* (1990) 87:3655-59; Wu *et al.*,  
5 *J. Biol. Chem.* (1991) 266:338-42. Preferably, receptor-mediated targeted delivery of therapeutic compositions containing antibodies of the invention is used to deliver the antibodies to specific tissue.

Therapeutic compositions containing antisense subgenomic polynucleotides are administered in a range of about 100 ng to about 200 mg of DNA for local  
10 administration in a gene therapy protocol. Concentration ranges of about 500 ng to about 50 mg, about 1 mg to about 2 mg, about 5 mg to about 500 mg, and about 20 mg to about 100 mg of DNA can also be used during a gene therapy protocol. Factors such as method of action and efficacy of transformation and expression are considerations which will affect the dosage required for ultimate efficacy of the  
15 antisense subgenomic nucleic acids. Where greater expression is desired over a larger area of tissue, larger amounts of antisense subgenomic nucleic acids or the same amounts readministered in a successive protocol of administrations, or several administrations to different adjacent or close tissue portions of, for example, a tumor site, may be required to effect a positive therapeutic outcome. In all cases, routine  
20 experimentation in clinical trials will determine specific ranges for optimal therapeutic effect. A more complete description of gene therapy vectors, especially retroviral vectors, is contained in U.S. Serial No. 08/869,309, which is expressly incorporated herein, and in section F below.

For genes encoding polypeptides or proteins with anti-inflammatory activity,  
25 suitable use, doses, and administration are described in U.S. Patent No. 5,654,173, incorporated herein by reference. Therapeutic agents also include antibodies to proteins and polypeptides encoded by the subject nucleic acids, as described in U.S. Patent No. 5,654,173.

#### 30 F. Gene Therapy

The therapeutic nucleic acids of the present invention may be utilized in gene delivery vehicles. The gene delivery vehicle may be of viral or non-viral origin (see generally, Jolly, *Cancer Gene Therapy* (1994) 1:51-64; Kimura, *Human Gene*

*Therpay* (1994) 5:845-852; Connelly, *Human Gene Therapy* (1995) 1:185-193; and Kaplitt, *Nature Genetics* (1994) 6:148-153). Gene therapy vehicles for delivery of constructs including a coding sequence of a therapeutic of the invention can be administered either locally or systemically. These constructs can utilize viral or non-  
5 viral vector approaches. Expression of such coding sequences can be induced using endogenous mammalian or heterologous promoters. Expression of the coding sequence can be either constitutive or regulated.

The present invention can employ recombinant retroviruses which are constructed to carry or express a selected nucleic acid molecule of interest. Retrovirus  
10 vectors that can be employed include those described in EP 0 415 731; WO 90/07936; WO 94/03622; WO 93/25698; WO 93/25234; U.S. Patent No. 5, 219,740; WO 93/11230; WO 93/10218; Vile and Hart, *Cancer Res.* (1993) 53:3860-3864; Vile and Hart, *Cancer Res.* (1993) 53:962-967; Ram et al., *Cancer Res.* (1993) 53:83-88; Takamiya et al., *J. Neurosci. Res.* (1992) 33:493-503; Baba et al., *J. Neurosurg.*  
15 (1993) 79:729-735; U.S. Patent no. 4,777,127; GB Patent No. 2,200,651; and EP 0 345 242. Preferred recombinant retroviruses include those described in WO 91/02805.

Packaging cell lines suitable for use with the above-described retroviral vector constructs may be readily prepared (see PCT publications WO 95/30763 and WO  
20 92/05266), and used to create producer cell lines (also termed vector cell lines) for the production of recombinant vector particles. Within particularly preferred embodiments of the invention, packaging cell lines are made from human (such as HT1080 cells) or mink parent cell lines, thereby allowing production of recombinant retroviruses that can survive inactivation in human serum.

25 The present invention also employs alphavirus-based vectors that can function as gene delivery vehicles. Such vectors can be constructed from a wide variety of alphaviruses, including, for example, Sindbis virus vectors, Semliki forest virus (ATCC VR-67; ATCC VR-1247), Ross River virus (ATCC VR-373; ATCC VR-1246) and Venezuelan equine encephalitis virus (ATCC VR-923; ATCC VR-1250;  
30 ATCC VR 1249; ATCC VR-532). Representative examples of such vector systems include those described in U.S. Patent Nos. 5,091,309; 5,217,879; and 5,185,440; and PCT Publication Nos. WO 92/10578; WO 94/21792; WO 95/27069; WO 95/27044; and WO 95/07994.

Gene delivery vehicles of the present invention can also employ parvovirus such as adeno-associated virus (AAV) vectors. Representative examples include the AAV vectors disclosed by Srivastava in WO 93/09239, Samulski et al., *J. Vir.* (1989) 63:3822-3828; Mendelson et al., *Viol.* (1988) 166:154-165; and Flotte et al., *PNAS* 5 (1993) 90:10613-10617.

Representative examples of adenoviral vectors include those described by Berkner, *Biotechniques* (1988) 6:616-627; Rosenfeld et al., *Science* (1991) 252:431-434; WO 93/19191; Kolls et al., *PNAS* (1994) 91:215-219; Kass-Eisler et al., *PNAS* (1993) 90:11498-11502; Guzman et al., *Circulation* (1993) 88:2838-2848; Guzman et 10 al., *Cir. Res.* (1993) 73:1202-1207; Zabner et al., *Cell* (1993) 75:207-216; Li et al., *Hum. Gene Ther.* (1993) 4:403-409; Cailaud et al., *Eur. J. Neurosci.* (1993) 5:1287-1291; Vincent et al., *Nat. Genet.* (1993) 5:130-134; Jaffe et al., *Nat. Genet.* (1992) 1:372-378; and Levrero et al., *Gene* (1991) 101:195-202. Exemplary adenoviral gene therapy vectors employable in this invention also include those described in WO 15 94/12649, WO 93/03769; WO 93/19191; WO 94/28938; WO 95/11984 and WO 95/00655. Administration of DNA linked to killed adenovirus as described in Curiel, *Hum. Gene Ther.* (1992) 3:147-154 may be employed.

Other gene delivery vehicles and methods may be employed, including polycationic condensed DNA linked or unlinked to killed adenovirus alone, for 20 example Curiel, *Hum. Gene Ther.* (1992) 3:147-154; ligand linked DNA, for example see Wu, *J. Biol. Chem.* (1989) 264:16985-16987; eukaryotic cell delivery vehicles cells, for example see U.S. Serial No. 08/240,030, filed May 9, 1994, and U.S. Serial No. 08/404,796; deposition of photopolymerized hydrogel materials; hand-held gene transfer particle gun, as described in U.S. Patent No. 5,149,655; ionizing radiation as 25 described in U.S. Patent No. 5,206,152 and in WO92/11033; nucleic charge neutralization or fusion with cell membranes. Additional approaches are described in Philip, *Mol. Cell Biol.* (1994) 14:2411-2418, and in Woffendin, *Proc. Natl. Acad. Sci.* (1994) 91:1581-1585.

Naked DNA may also be employed. Exemplary naked DNA introduction 30 methods are described in WO 90/11092 and U.S. Patent No. 5,580,859. Uptake efficiency may be improved using biodegradable latex beads. DNA coated latex beads are efficiently transported into cells after endocytosis initiation by the beads. The method may be improved further by treatment of the beads to increase



hydrophobicity and thereby facilitate disruption of the endosome and release of the DNA into the cytoplasm. Liposomes that can act as gene delivery vehicles are described in U.S. Patent No. 5,422,120, PCT Nos. WO 95/13796, WO 94/23697, and WO 91/14445, and EP No. 0 524 968.

5 Further non-viral delivery suitable for use includes mechanical delivery systems such as the approach described in Woffendin *et al.*, *Proc. Natl. Acad. Sci. USA* (1994) 91(24):11581-11585. Moreover, the coding sequence and the product of expression of such can be delivered through deposition of photopolymerized hydrogel materials. Other conventional methods for gene delivery that can be used for delivery  
10 of the coding sequence include, for example, use of hand-held gene transfer particle gun, as described in U.S. Patent No. 5,149,655; use of ionizing radiation for activating transferred gene, as described in U.S. Patent No. 5,206,152 and PCT No. WO 92/11033.

#### 15 G. Transgenic Animals

One aspect of the present invention relates to transgenic non-human animals having germline and/or somatic cells in which the biological activity of one or more genes are altered by a chromosomally incorporated transgene.

In a preferred embodiment, the transgene encodes a mutant protein, such as  
20 dominant negative protein which antagonizes at least a portion of the biological function of a wild-type protein.

Yet another preferred transgenic animal includes a transgene encoding an antisense transcript which, when transcribed from the transgene, hybridizes with a gene or a mRNA transcript thereof, and inhibits expression of the gene.

25 In one embodiment, the present invention provides a desired non-human animal or an animal (including human) cell which contains a predefined, specific and desired alteration rendering the non-human animal or animal cell predisposed to cancer. Specifically, the invention pertains to a genetically altered non-human animal (most preferably, a mouse), or a cell (either non-human animal or human) in culture,  
30 that is defective in at least one of two alleles of a tumor-suppressor gene. The inactivation of at least one of these tumor suppressor alleles results in an animal with a higher susceptibility to tumor induction or other proliferative or differentiative disorders, or disorders marked by aberrant signal transduction, e.g., from a cytokine or

growth factor. A genetically altered mouse of this type is able to serve as a useful model for hereditary cancers and as a test animal for carcinogen studies. The invention additionally pertains to the use of such non-human animals or animal cells, and their progeny in research and medicine.

5           Furthermore, it is contemplated that cells of the transgenic animals of the present invention can include other transgenes, e.g., which alter the biological activity of a second tumor suppressor gene or an oncogene. For instance, the second transgene can functionally disrupt the biological activity of a second tumor suppressor gene, such as p53, p73, DCC, p21<sup>cip1</sup>, p27<sup>kip1</sup>, Rb, Mad or E2F. Alternatively, the  
10           second transgene can cause overexpression or loss of regulation of an oncogene, such as ras, myc, a cdc25 phosphatase, Bcl-2, Bcl-6, a transforming growth factor, neu, int-3, polyoma virus middle T antigen, SV40 large T antigen, a papillomaviral E6 protein, a papillomaviral E7 protein, CDK4, or cyclin D1.

          A preferred transgenic non-human animal of the present invention has  
15           germline and/or somatic cells in which one or more alleles of a gene are disrupted by a chromosomally incorporated transgene, wherein the transgene includes a marker sequence providing a detectable signal for identifying the presence of the transgene in cells of the transgenic animal, and replaces at least a portion of the gene or is inserted into the gene or disrupts expression of a wild-type protein.

20           Still another aspect of the present invention relates to methods for generating non-human animals and stem cells having a functionally disrupted endogenous gene. In a preferred embodiment, the method comprises the steps of:

- (i) constructing a transgene construct including (a) a recombination region having at least a portion of the gene, which recombination region directs  
25           recombination of the transgene with the gene, and (b) a marker sequence which provides a detectable signal for identifying the presence of the transgene in a cell;
- (ii) transferring the transgene into stem cells of a non-human animal;
- (iii) selecting stem cells having a correctly targeted homologous recombination  
30           between the transgene and the gene;
- (iv) transferring cells identified in step (iii) into a non-human blastocyst and implanting the resulting chimeric blastocyst into a non-human female; and

- (v) collecting offspring harboring an endogenous gene allele having the correctly targeted recombination.

Yet another aspect of the invention provides a method for evaluating the carcinogenic potential of an agent by (i) contacting a transgenic animal of the present invention with a test agent, and (ii) comparing the number of transformed cells in a sample from the treated animal with the number of transformed cells in a sample from an untreated transgenic animal or transgenic animal treated with a control agent. The difference in the number of transformed cells in the treated animal, relative to the number of transformed cells in the absence of treatment with a control agent, indicates the carcinogenic potential of the test compound.

Another aspect of the invention provides a method of evaluating an anti-proliferative activity of a test compound. In preferred embodiments, the method includes contacting a transgenic animal of the present invention, or a sample of cells from such animal, with a test agent, and determining the number of transformed cells in a specimen from the transgenic animal or in the sample of cells. A statistically significant decrease in the number of transformed cells, relative to the number of transformed cells in the absence of the test agent, indicates the test compound is a potential anti-proliferative agent.

The practice of the present invention will employ, unless otherwise indicated, conventional techniques of cell biology, cell culture, molecular biology, transgenic biology, microbiology, recombinant DNA, and immunology, which are within the skill of the art. Such techniques are explained fully in the literature. See, for example, *Molecular Cloning A Laboratory Manual*, 2nd Ed., ed. by Sambrook, Fritsch and Maniatis (Cold Spring Harbor Laboratory Press:1989); *DNA Cloning*, Volumes I and II (D. N. Glover ed., 1985); *Oligonucleotide Synthesis* (M. J. Gait ed., 1984); Mullis *et al.* U.S. Patent No. 4,683,195; *Nucleic Acid Hybridization* (B.D. Hames & S. J. Higgins eds. 1984); *Transcription And Translation* (B. D. Hames & S. J. Higgins eds. 1984); *Culture Of Animal Cells* (R. I. Freshney, Alan R. Liss, Inc., 1987); *Immobilized Cells And Enzymes* (IRL Press, 1986); B. Perbal, *A Practical Guide To Molecular Cloning* (1984); the treatise, *Methods In Enzymology* (Academic Press, Inc., N.Y.); *Gene Transfer Vectors For Mammalian Cells* (J. H. Miller and M. P. Calos eds., 1987, Cold Spring Harbor Laboratory); *Methods In Enzymology*, Vols. 154 and 155 (Wu et al. eds.), *Immunochemical Methods In Cell And Molecular*

*Biology* (Mayer and Walker, eds., Academic Press, London, 1987); *Handbook Of Experimental Immunology*, Volumes I-IV (D. M. Weir and C. C. Blackwell, eds., 1986); *Manipulating the Mouse Embryo*, (Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1986).

5 As mentioned above, the sequences described herein are believed to have particular utility in regards to colon cancer. However, they may also be useful with other types of cancers and other disease states.

The present invention will now be illustrated by reference to the following examples which set forth particularly advantageous embodiments. However, it should  
10 be noted that these embodiments are illustrative and are not to be construed as restricting the invention in any way.

## XI. Examples

### A. Identification of differentially expressed sequences.

15

#### Description of the Libraries

SEQ ID Nos: 1-544 were derived from libraries designated as DE and PA as described below. The DE library is a normalized, colon cancer specific, subtracted cDNA library. The DE library is specific for sequences expressed in colon cancer  
20 [proximal and distal Dukes' B, microsatellite instability negative (MSI-)] but not expressed in normal tissues, including normal colon tissue. The PA library is a normalized, colon specific, subtracted cDNA library. The PA library is specific for sequences expressed in normal colon tissue but not expressed in other normal tissues.

#### 25 Construction of a colon cancer specific library

A subtracted colon cancer specific library was made by subtracting pooled proximal, stage B, MSI<sup>-</sup> and distal, Stage B, MSI<sup>-</sup> tumor tissue cDNA against a combination of pooled driver normal cDNA made from colon, peripheral blood leukocytes (PBL), liver, spleen, lung, kidney, heart, small intestine, skeletal muscle,  
30 and prostate tissue cDNAs. The following RNA samples were obtained from Origene Technologies, Inc., Rockville, Maryland, and were used to synthesize the pooled driver cDNA: #HT-1015 normal colon total RNA, #HT-1005 liver total RNA, #HT-1004 spleen total RNA, #HT-1009 lung total RNA, #HT-1003 kidney total RNA,

#HT-1006 peripheral blood leukocyte total RNA, #HT-prostate total RNA, #HM-1002 heart muscle poly A+ RNA, #HM-1007 intestine poly A+ RNA, and #HM-1008 skeletal muscle poly A+ RNA. First-strand cDNA was prepared for each using 1 microgram of RNA. A biased pool of first-strand cDNA was prepared containing  
5 50% normal colon first-strand cDNA reaction and 5.56% of each of the remaining tissue first-strand cDNA reactions by volume. Eight individual amplification reactions, each containing 1 microliter of the biased first-strand cDNA reaction pool, were performed for 18 cycles. The double stranded cDNA product from all eight amplification reactions were pooled and purified for subsequent use in subtractive  
10 hybridization. The colon cancer specific subtracted library was called DE and individual clones derived from this library were referred to with a number prefixed by DE.

Normalized subtracted DE colon cancer specific and pooled normal human tissue specific cDNA libraries (same as components of driver cDNA above) were  
15 generated according published procedures (Daitchenko et al., 1996 PNAS 93:6025-6030, Gurskaya et al., 1996 Analytical Biochemistry 240:90-97) using Clontech Laboratories, Inc., PCR-Select cDNA subtraction kit, PT1117-1. A forty-five fold mass excess of driver cDNA (450 nanograms) was used for each subtraction experiment. Subtractive hybridization of tester with driver cDNAs was performed  
20 twice, each time for about 8 -12 hours. Subtracted cancer specific DE cDNA was ligated into the pCR2.1-TOPO plasmid vector (Invitrogen Corporation, Carlsbad CA) and chemically transformed into ultracompetent Epicurian E. coli XL10-Gold cells (Stratagene, La Jolla, CA). A reverse library was also constructed wherein the tester and driver samples were switched; this library was designated as MD.

25

#### Construction of a normal colon specific library

This normal colon tissue specific library was made using Clontech Laboratories Inc PCR-Select kit, K1804-1, following instructions from the users manual (PT1117-1).

30

Four, 100 µl, SMART PCR cDNA amplification reactions for each normal, non-cancerous, patient sample, were performed, starting with 1 µl from their respective first strand cDNA reactions. Each sample was amplified for only 18 cycles using the following PCR conditions; 95 C-10 sec, 68 C 5 min. using a 9600 Perkin

Elmer instrument. The following are Bayer Diagnostic sample identification numbers for the cDNA samples that were amplified: NPB(-) 27347, NPB(-)27859, NPB(-)28147, NPB(-)28162, NDB(-)28800, NDB(-)29243, NDB(-)29244 and NDB(-)42472. These are normal colon tissue samples obtained from the same

5 patients providing the proximal stage B MSI – and distal stage B MSI- cancer samples, which were used to prepare the DE library described above. Equal volumes of the eight normal colon cDNAs were pooled. A subtracted normal colon tissue specific library was made by subtracting the normal colon cDNA pool against a combination of pooled driver normal cDNA made from peripheral blood leukocytes

10 (PBL), liver, spleen, lung, kidney, heart, small intestine, skeletal muscle, and prostate tissue cDNAs. The following are the RNA samples that were used to synthesize the pooled driver cDNA: #HT-1005 liver total RNA, #HT-1004 spleen total RNA, #HT-1009 lung total RNA, #HT-1003 kidney total RNA, #HT-1006 peripheral blood leukocyte total RNA, #HT-prostate total RNA, #HM-1002 heart muscle poly A+

15 RNA, #HM-1007 intestine poly A+ RNA, and #HM-1008 skeletal muscle poly A+ RNA. First-strand cDNA was prepared for each using 1 microgram of RNA. A pool of first strand cDNA reactions was then made consisting of equal volumes of the nine driver tissue first-strand cDNA reactions. Eight individual amplification reactions, each containing 1 microliter of the first-strand cDNA reaction pool, were performed

20 for 18 cycles. The double stranded cDNA product from all eight amplification reactions was pooled and purified for subsequent use in subtractive hybridization. The normal colon tissue specific subtracted library was called PA and individual clones derived from this library were referred to with a number prefixed by PA.

The normalized subtracted PA normal colon specific cDNA library and a

25 subtracted normal human tissue specific cDNA library, consisting of the human tissues listed above were generated according published procedures (Daitchenko et al., 1996 PNAS 93:6025-6030, Gurskaya et al., 1996 Analytical Biochemistry 240:90-97) using Clontech Laboratories, Inc., PCR-Select cDNA subtraction kit, PT1117-1. Library construction and cloning were carried out as described above for the colon

30 cancer specific library. Out of the 1152 clones that were analyzed for differential expression, approximately 69% were differentially expressed.

Each EST isolated from each of the above libraries represents a sequence from a partial mRNA transcript, since the cDNA used for making the subtracted library

was restricted with *RsaI*, a four base cutter restriction endonuclease that generates fragments with an average size of about 600 base pairs.

#### Validation of differential expression in colon cancer

5 To validate that the differentially expressed sequences found in this library were specific to colon cancer, the clones were screened with cDNAs prepared from a colon cancer specific library, Delaware (DE), and a normal tissue specific library Maryland (MD).

cDNA clones were analyzed for differential expression following the procedure developed by von Stein et al., 1997, Nucleic Acids Research 25(13):2598-  
10 2602 and using probes synthesized according to a published method (Jin et al., 1997, Biotechniques 23:1083-1086). Out of the 1248 clones that were analyzed for differential expression approximately 83% were differentially expressed.

#### Sequencing and analysis of differentially expressed clones

15 The nucleotide sequence of the inserts from clones shown to be differentially expressed was determined by single-pass sequencing from either the T7 or M13 promoter sites using fluorescently labeled dideoxynucleotides via the Sanger sequencing method. Sequences were analyzed according to methods described in the text (XI., Examples; B. Results of Public Database Search).

20 Each nucleic acid represents sequence from at least a partial mRNA transcript. The nucleic acids of the invention were assigned a sequence identification number (see attachments). The nucleic acid sequences are provided in the attached Sequence Listing.

An example of an experiment to identify differentially expressed clones is  
25 shown in the Figure, "Differential Expression Analysis". The inserts from subtracted clones were amplified, electrophoresed, and blotted on to membranes as described above. The gel was hybridized with *RSAI* cut DE and MD cDNA probes as described above.

In the Figure, individual clones are designated by a number at the top of each  
30 lane; the blots are aligned so that the same clone is represented in the same vertical lane in both the upper ("Cancer Probe") and lower ("Normal Probe") blot. Lanes labeled "O" indicate clones that are overexpressed, i.e., show a darker, more prominent band in the upper blot ("Cancer Probe") relative to that observed, in the

same lane, in the lower blot ("Normal Probe"). The Lane labeled "U" indicates a clone that is underexpressed, i.e., shows a darker, more prominent band in the lower blot ("Normal Probe") relative to that observed, in the same lane, in the upper blot ("Cancer Probe"). The lane labeled "M", indicates a clone that is marginally overexpressed in cancer and normal cells.

**B. Results of Public Databases Searches**

The nucleotide sequence of SEQ ID Nos. 1-544 were aligned with individual sequences that were publicly available. Genbank and divisions of GenBank, such as dbEST, CGAP, and Unigene were the primary databases used to perform the sequence similarity searches. The patent database, GENESEQ, was also utilized.

A total of 544 sequences were analyzed. The sequences were first masked to identify vector-derived sequences, which were subsequently removed. The remaining sequence information was used to create the Sequence Listing (SEQ ID Nos. 1-544). Each of these sequences was used as the query sequence to perform a Blast 2 search against the databases listed above. The Blast 2 search differs from the traditional Blast search in that it allows for the introduction of gaps in order to produce an optimal alignment of two sequences.

A proprietary algorithm was developed to utilize the output from the Blast 2 searches and categorize the sequences based upon high similarity (e value < 1e-40) or identity to entries contained in the GenBank and dbEST databases. Three categories were created as follows: 1) matches to known human genes, 2) matches to human EST sequences, and 3) no significant match to either 1 or 2, and therefore a potentially novel human sequence.

Those skilled in the art will recognize, or be able to ascertain, using not more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such specific embodiments and equivalents are intended to be encompassed by the following claims.

All patents, published patent applications, and publications cited herein are incorporated by reference as if set forth fully herein.



TABLE 1

SEQ ID NO	clone name	Tissue Probe	SEQ ID NO	clone name	Tissue Probe
1	de0020t7	U	53	de0079t7	N
2	de0041t7	N	54	de0085t7	N
3	de0056t7	U	55	de0089t7	N
4	de0064t7	N	56	de0095t7	N
5	de0092t7	U	57	de0099t7	N
6	de0142t7	N	58	de0105t7	N
7	de0153t7	M	59	de0112t7	N
8	de0163t7	U	60	de0114t7	N
9	de0188t7	N	61	de0121t7	N
10	de0190t7	U	62	de0122t7	N
11	de0201t7	M	63	de0124t7	N
12	de0225t7	U	64	de0139t7	M
13	de0246t7	U	65	de0143t7	N
14	de0257t7	N	66	de0166t7	U
15	de0285t7	O	67	de0168t7	N
16	de0529t7	U	68	de0171t7	N
17	de0629t7	U	69	de0178t7	N
18	de0727t7	O	70	de0180t7	O
19	de0787t7	U	71	de0181t7	N
20	de0810t7	N	72	de0199t7	N
21	de0833t7	N	73	de0200t7	N
22	pa0107t7	U	74	de0202t7	N
23	pa0130t7	U	75	de0205t7	N
24	pa0149t7	U	76	de0207t7	U
25	pa0185t7	U	77	de0212t7	N
26	pa0203t7	U	78	de0217t7	N
27	pa0277t7	U	79	de0220t7	U
28	pa0287t7	U	80	de0228t7	N
29	pa0293t7*	U	81	de0236t7	O
30	pa0341t7	U	82	de0243t7	N
31	pa0357t7	N	83	de0253t7	O
32	pa0361t7	U	84	de0258t7	N
33	pa0404t7	U	85	de0259t7	N
34	pa0408t7	U	86	de0262t7	N
35	pa0425t7	N	87	de0270t7	N
36	de0001t7	N	88	de0275t7	N
37	de0002t7	N	89	de0287t7	N
38	de0036t7	N	90	de0288t7	N
39	de0038t7	M	91	de0306t7	N
40	de0040t7	N	92	de0490t7	N
41	de0043t7	O	93	de0501t7	M
42	de0044t7	N	94	de0516t7	N
43	de0045t7	N	95	de0589t7	N
44	de0050t7	N	96	de0596t7	U
45	de0052t7	N	97	de0600t7	N
46	de0054t7	N	98	de0609t7	U
47	de0055t7	N	99	de0611t7	N
48	de0059t7	O	100	de0617t7	U
49	de0060t7	N	101	de0633t7	N
50	de0063t7	U	102	de0643t7	N
51	de0066t7	O	103	d 0647t7	M
52	de0067t7	O	104	de0652t7	N

105	de0666t7	N	161	pa0405t7	N
106	de0695t7	U	162	pa0406t7	N
107	de0705t7	N	163	pa0409t7	U
108	de0706t7	M	164	pa0411t7	N
109	de0708t7	N	165	pa0417t7	N
110	de0724t7	N	166	pa0421t7	U
111	de0735t7	N	167	pa0429t7	U
112	de0740t7	N	168	pa0432t7	U
113	de0742t7	N	169	de0004t7	U
114	de0747t7	N	170	de0008t7	ND
115	de0764t7	N	171	de0009t7	ND
116	de0777t7	O	172	de0010t7	ND
117	de0781t7	N	173	de0011t7	ND
118	de0793t7	U	174	de0012t7	ND
119	de0794t7	N	175	de0013t7	ND
120	de0798t7	N	176	de0014t7	ND
121	de0800t7	O	177	de0016t7	ND
122	de0816t7	N	178	de0017t7	ND
123	de0818t7	N	179	de0018t7	M
124	de0835t7	N	180	de0019t7	ND
125	pa0078t7	U	181	de0023t7	O
126	pa0080t7	N	182	de0024t7	N
127	pa0088t7	U	183	de0029t7	ND
128	pa0089t7	U	184	de0030t7	ND
129	pa0095t7	U	185	de0032t7	ND
130	pa0158t7	U	186	de0033t7	O
131	pa0159t7	U	187	de0034t7	ND
132	pa0187t7	N	188	de0035t7	ND
133	pa0190t7	U	189	de0042t7	ND
134	pa0192t7	U	190	de0047t7	ND
135	pa0209t7	U	191	de0048t7	N
136	pa0215t7	N	192	de0049t7	ND
137	pa0218t7	N	193	de0051t7	O
138	pa0220t7	N	194	de0053t7	ND
139	pa0238t7	N	195	de0065t7	ND
140	pa0249t7	U	196	de0068t7	N
141	pa0256t7	N	197	de0069t7	ND
142	pa0258t7	U	198	de0071t7	N
143	pa0272t7	N	199	de0072t7	ND
144	pa0283t7	N	200	de0076t7	U
145	pa0295t7	N	201	de0077t7	ND
146	pa0309t7	U	202	de0078t7	ND
147	pa0314t7	N	203	de0080t7	ND
148	pa0317t7	N	204	de0082t7	ND
149	pa0319t7	N	205	de0086t7	ND
150	pa0323t7	N	206	de0087t7	ND
151	pa0333t7	N	207	de0088t7	ND
152	pa0336t7	N	208	de0093t7	N
153	pa0353t7	N	209	de0094t7	ND
154	pa0363t7	N	210	de0097t7	O
155	pa0364t7	N	211	de0098t7	ND
156	pa0366t7	U	212	de0100t7	ND
157	pa0382t7	N	213	de0101t7	ND
158	pa0383t7	N	214	de0102t7	ND
159	pa0388t7	N	215	de0106t7	ND
160	pa0389t7	N	216	de0109t7	U

217	de0110t7	N	273	de0214t7	ND
218	de0111t7	N	274	d 0215t7	ND
219	de0113t7	ND	275	de0218t7	ND
220	de0115t7	O	276	de0221t7	ND
221	de0117t7	ND	277	de0223t7	O
222	de0118t7	U	278	de0227t7	ND
223	de0119t7	ND	279	de0229t7	O
224	de0123t7	ND	280	de0230t7	ND
225	de0125t7	ND	281	de0232t7	ND
226	de0126t7	ND	282	de0234t7	ND
227	de0129t7	ND	283	de0235t7	ND
228	de0130t7	U	284	de0237t7	ND
229	de0131t7	O	285	de0238t7	ND
230	de0132t7	ND	286	de0239t7	N
231	de0134t7	O	287	de0241t7	N
232	de0135t7	ND	288	de0242t7	O
233	de0137t7	M	289	de0244t7	N
234	de0138t7	ND	290	de0247t7	O
235	de0140t7	ND	291	de0252t7	ND
236	de0141t7	ND	292	de0255t7	N
237	de0145t7	ND	293	de0256t7	ND
238	de0146t7	O	294	de0260t7	N
239	de0148t7	ND	295	de0261t7	N
240	de0149t7	ND	296	de0263t7	N
241	de0151t7	O	297	de0264t7	ND
242	de0152t7	ND	298	de0265t7	ND
243	de0154t7	ND	299	de0266t7	O
244	de0156t7	ND	300	de0267t7	N
245	de0157t7	U	301	de0268t7	ND
246	de0158t7	ND	302	de0272t7	ND
247	de0159t7	N	303	de0273t7	ND
248	de0162t7	ND	304	de0274t7	N
249	de0169t7	U	305	de0276t7	O
250	de0170t7	O	306	de0277t7	M
251	de0174t7	ND	307	de0279t7	N
252	de0176t7	ND	308	de0280t7	ND
253	de0177t7	O	309	de0281t7	N
254	de0182t7	ND	310	de0282t7	ND
255	de0183t7	ND	311	de0284t7	ND
256	de0184t7	ND	312	de0286t7	ND
257	de0186t7	ND	313	de0339t7	ND
258	de0187t7	M	314	de0483t7	ND
259	de0189t7	ND	315	de0484t7	M
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261	de0192t7	ND	317	de0499t7	ND
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263	de0195t7	N	319	de0511t7	O
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266	de0198t7	ND	322	de0522t7	ND
267	de0203t7	ND	323	de0524t7	M
268	de0208t7	ND	324	de0530t7	ND
269	de0209t7	N	325	de0531t7	ND
270	de0210t7	N	326	de0532t7	M
271	de0211t7	ND	327	de0534t7	N
272	de0213t7	ND	328	de0542t7	ND

329	de0556t7	M	385	de0707t7	O
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331	d 0559t7	U	387	d 0710t7	ND
332	de0562t7	ND	388	de0712t7	N
333	de0566t7	U	389	de0715t7	ND
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335	de0568t7	ND	391	de0722t7	ND
336	de0570t7	ND	392	de0723t7	ND
337	de0571t7	ND	393	de0725t7	N
338	de0574t7	ND	394	de0728t7	ND
339	de0581t7	ND	395	de0729t7	ND
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341	de0587t7	ND	397	de0732t7	ND
342	de0588t7	ND	398	de0737t7	ND
343	de0591t7	ND	399	de0739t7	M
344	de0592t7	ND	400	de0741t7	ND
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347	de0599t7	ND	403	de0749t7	N
348	de0602t7	N	404	de0750t7	ND
349	de0605t7	ND	405	de0756t7	ND
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351	de0610t7	ND	407	de0761t7	O
352	de0616t7	O	408	de0762t7	ND
353	de0619t7	U	409	de0766t7	ND
354	de0620t7	ND	410	de0768t7	U
355	de0622t7	ND	411	de0769t7	ND
356	de0623t7	ND	412	de0772t7	ND
357	de0624t7	O	413	de0776t7	ND
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359	de0628t7	ND	415	de0785t7	ND
360	de0630t7	ND	416	de0786t7	ND
361	de0631t7	ND	417	de0788t7	ND
362	de0632t7	N	418	de0789t7	ND
363	de0634t7	ND	419	de0792t7	ND
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365	de0642t7	ND	421	de0797t7	ND
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367	de0650t7	N	423	de0804t7	ND
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371	de0661t7	O	427	de0811t7	O
372	de0662t7	O	428	de0812t7	ND
373	de0664t7	ND	429	de0817t7	N
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376	de0669t7	ND	432	de0822t7	ND
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378	de0686t7	N	434	de0824t7	N
379	de0687t7	ND	435	de0825t7	ND
380	de0689t7	N	436	de0826t7	ND
381	de0691t7	M	437	de0827t7	ND
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444	pa0081t7	ND	500	pa0261t7	N
445	pa0082t7	ND	501	pa0262t7	ND
446	pa0083t7	ND	502	pa0264t7	N
447	pa0084t7	ND	503	pa0265t7	N
448	pa0085t7	ND	504	pa0268t7	ND
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463	pa0131t7	U	519	pa0318t7	ND
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465	pa0135t7	N	521	pa0325t7	N
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473	pa0157t7	ND	529	pa0358t7	ND
474	pa0164t7	ND	530	pa0360t7	N
475	pa0167t7	N	531	pa0362t7	ND
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477	pa0174t7	ND	533	pa0369t7	ND
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481	pa0184t7	ND	537	pa0395t7	ND
482	pa0186t7	U	538	pa0396t7	ND
483	pa0189t7	ND	539	pa0397t7	ND
484	pa0207t7	ND	540	pa0410t7	N
485	pa0210t7	ND	541	pa0415t7	ND
486	pa0212t7	ND	542	pa0416t7	ND
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488	pa0216t7	ND	544	pa0430t7	ND
489	pa0217t7	M			
490	pa0219t7	N			
491	pa0223t7	ND			
492	pa0224t7	ND			
493	pa0228t7	ND			
494	pa0229t7	U			
495	pa0231t7	ND			
496	pa0232t7	ND			

\* In the provisional application (60/098,639) filed August 31, 1998, clone PA0293t7 was labeled clone PA0023t7 in error. That mistake has been corrected here to reflect the accurate clone name.

## Table 2

SEQ ID NO	Clone name	"Novel" Region 1		"Novel" Region 2		GenBank Identifier for top 5 matching EST sequences
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40.00	de0040t7	1-201				g2166831 g4136486 g1747976 g1180529 g2265195
41.00	de0043t7	467-615				g5129477 g1801229 g1845053 g1544683 g1694347
43.00	de0045t7	1-228				g2322205 g1139955 g4267203 g2165927 g3039227
45.00	de0052t7	455-628				g1523492 g1548890 g1523465 g1809433 g5132985
50.00	de0063t7	1-114		452-624		g2197338 g5754794 g2694448 g2070840 g3419233
51.00	de0066t7	301-631				g2162184 g749398 g1239250 g839454 g1966148
52.00	de0067t7	391-623				g1521548 g848102 g1349419 g1196287 g771178
54.00	de0085t7	415-565				g1367045 g1367136 g2337716 g841637 g795336
63.00	de0124t7	411-605				g1809451 g1757444 g3181138 g2905518 g1157799
64.00	de0139t7	424-612				g3899105 g3431615 g3246439 g1312989 g1182375
65.00	de0143t7	479-598				g1239204 g1067288 g1080541 g4876470 g1188553
68.00	de0171t7	443-611				g867521 g1636718 g2162333 g2342197 g1466482
69.00	de0178t7	485-603				g1371240 g2055704 g2208007 g1686872 g1740908
71.00	de0181t7	1-153				g1188057 g1018287 g1447796 g1025264 g1069169
73.00	de0200t7	1-218		384-581		g1972267 g1989383 g964966 g2883986 g483738
74.00	de0202t7	448-599				g2115372 g1959491 g1329334 g1198642 g1957432
75.00	de0205t7	1 to 75				g779809 g2167738 g2537620 g2656428
77.00	de0212t7	1-185				g4265939 g1548503 g1687914 g1716864 g877386
80.00	de0228t7	411-594				g3446139 g3745043 g1126367 g2163321 g1195781
82.00	de0243t7	253-604				g2001999 g1071313 g968668 g26974
83.00	de0253t7	1-133				g2111781 g1663818 g574791 g1406232 g1663812
85.00	de0259t7	241-602				g2216159 g5177204 g1969363 g1388290 g1389464
86.00	de0262t7	351-583				g1025700 g2019225 g2080424 g1547366 g728148
88.00	de0275t7	455-592				g5665082 g553136 g5552975 g389141 g1665092
89.00	de0287t7	364-630				g2028446 g4622337 g2021046 g2056125 g5037418
92.00	de0490t7	1-264		482-653		g1812285 g2816130 g2818085 g2819140 g1194260
96.00	de0596t7	362-655				g1155862 g1991972 g1996949 g1149020 g3307331
97.00	de0600t7	1 to 71				g883470 g1880085 g3162627 g3162628 g918039
98.00	de0609t7	434-582				g5037002 g1404408 g2816378 g759987 g2969638
102.00	de0643t7	433-605				g1382697 g5236495 g5235876 g5177792 g4453929

105.00	de066617	385-586	g2932996	g1010052	g2616680	g3277252	g2252166
106.00	de069517	401-644	g4897106	g1741190	g1501550	g3932286	g781364
107.00	de070517	431-599	g5176918	g1551249	g4739742	g2540062	g2583382
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110.00	de072417	127-192	g2036407	g1969842	g616903	g1218717	g1745366
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116.00	de077717	270-610	g2358992	g1692100	g1979572	g1720777	g1547963
117.00	de078117	457-608	g1982258	g1379170	g1496197	g1981084	g1982434
118.00	de079317	435-577	g1860678	g1991856	g946392	g4703537	g5741112
119.00	de079417	342-584	g4394682	g3418148	g3424422	g1398292	g4985474
120.00	de079817	1 to 65	g1570282	g4817443	g3891031	g2028723	g2357411
121.00	de080017	270-568	g2358992	g1692100	g1979572	g1720777	g1692006
122.00	de081617	485-550	g2014274	g2189652	g1087845	g2013302	g643722
123.00	de081817	387-573	g4190027	g4900502	g3601481	g4070577	g4112474
124.00	de083517	330-570	g2029304	g2029457	g1544689	g1947895	g2986865
129.00	pa009517	1-370	g5340876	g771049	g791906	g677786	
132.00	pa018717	388-593	g2029457	g2029304	g1544689	g1947895	g2986865
134.00	pa019217	444-618	g4897608	g1815096	g2051120	g3426889	g4690585
139.00	pa023817	364-586	g4728995	g4971678	g1615267	g1501282	g5447095
140.00	pa024917	124-588	g2061363	g2060961	g2060863	g1135265	g2060372
142.00	pa025817	254-595	g2784639	g2276958	g968701	g1670101	g2329615
143.00	pa027217	1 to 98	g2198976	g1961065	g2188645	g1965162	g1852287
148.00	pa031717	457-612	g5113829	g2080750	g3739118	g3753615	g2933157
153.00	pa035317	357-620	g2029457	g2029304	g2986865	g1544689	g1947895
156.00	pa036617	354-760	g5339118	g775873	g610250	g3886660	g2052048
157.00	pa038217	395-668	g3886319	g968094	g2216376	g4126052	g1747689
159.00	pa038817	492-739	g1636721	g2006249	g5035641	g3430502	g778670
160.00	pa038917	1-177	g1321159	g1320039	g1371307	g2070781	g1350314
161.00	pa040517	119-214	g4824527	g4852801	g1368093	g1392201	g1350038
164.00	pa041117	289-345	g4810371	g2369264	g3163382	g3839554	g1950020
166.00	pa042117	233-745	g5747013	g4150749	g1482715	g1137706	g3900569

423-603

384-585

## TABLE 3

The following list of clones indicates those found in either the DE or PA libraries and the SW480 library

SEQ ID NO	clone name
185	de0032t7
186	de0033t7
193	de0051t7
196	de0068t7
240	de0149t7
241	de0151t7
247	de0159t7
72	de0199t7
279	de0229t7
281	de0232t7
283	de0235t7
306	de0277t7
310	de0282t7
318	de0507t7
328	de0542t7
331	de0559t7
342	de0588t7
359	de0628t7
375	de0667t7
379	de0687t7
407	de0761t7
410	de0768t7
427	de0811t7
466	pa0140t7
470	pa0147t7
481	pa0184t7
493	pa0228t7
494	pa0229t7
140	pa0249t7
506	pa0279t7
510	pa0299t7
515	pa0306t7
517	pa0311t7
518	pa0316t7
536	pa0393t7
539	pa0397t7
544	pa0430t7



We claim:

1. An isolated nucleic acid comprising a nucleotide sequence which hybridizes under stringent conditions to a sequence of SEQ ID Nos. 1-35 or a sequence complementary thereto.
2. An isolated nucleic acid comprising a nucleotide sequence at least 80% identical to a sequence corresponding to at least about 15 consecutive nucleotides of one of SEQ ID Nos. 1-35 or a sequence complementary thereto.
3. An isolated nucleic acid comprising a nucleotide sequence of SEQ ID Nos. 1-35 or a sequence complementary thereto.
4. A nucleic acid according to claim 1, further comprising a transcriptional regulatory sequence operably linked to said nucleotide sequence so as to render said nucleotide sequence suitable for use as an expression vector.
5. An expression vector, capable of replicating in at least one of a prokaryotic cell and eukaryotic cell, comprising the nucleic acid of claim 4.
6. A host cell transfected with the expression vector of claim 5.
7. A transgenic animal having a transgene of the nucleic acid of claim 1 incorporated in cells thereof, which transgene modifies the level of expression of the nucleic acid, the stability of an mRNA transcript of the nucleic acid, or the activity of the encoded product of the nucleic acid.
8. A substantially pure nucleic acid which hybridizes under stringent conditions to a nucleic acid probe corresponding to at least 12 consecutive nucleotides of one of SEQ ID Nos. 1-168 or a sequence complementary thereto.
9. A polypeptide including an amino acid sequence encoded by a nucleic acid of claim 1 or a fragment comprising at least 25 amino acids thereof.

10. A probe/primer comprising a substantially purified oligonucleotide, said oligonucleotide containing a region of nucleotide sequence which hybridizes under stringent conditions to at least 12 consecutive nucleotides of sense or antisense sequence selected from SEQ ID Nos. 1-168.
- 5
11. An array including at least 10 different probes of claim 10 attached to a solid support.
12. The probe/primer of claim 10, further comprising a label group attached thereto and able to be detected.
- 10
13. The probe/primer of claim 12, wherein said label group being selected from radioisotopes, fluorescent compounds, enzymes, and enzyme co-factors.
14. An antibody immunoreactive with a polypeptide of claim 9.
- 15
15. An antisense oligonucleotide analog which hybridizes under stringent conditions to at least 12 consecutive nucleotides of one of SEQ ID Nos. 1-35 or a sequence complementary thereto, and which is resistant to cleavage by a nuclease.
- 20
16. A test kit for determining the phenotype of transformed cells, comprising the probe/primer of claim 12, for measuring a level of a nucleic acid which hybridizes under stringent conditions to a nucleic acid of SEQ ID Nos. 1-544 in a sample of cells isolated from a patient.
- 25
17. A test kit for determining the phenotype of transformed cells, comprising an antibody specific for a protein encoded by a nucleic acid which hybridizes under stringent conditions to any one of SEQ Nos. 1-544.
- 30
18. A method of determining the phenotype of a cell, comprising detecting the differential expression, relative to a normal cell, of at least one nucleic acid

which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544, wherein the nucleic acid is differentially expressed by at least a factor of two.

19. A method for determining the phenotype of cells in a sample of cells from a patient, comprising:
- i. providing a nucleic acid probe comprising a nucleotide sequence having at least 12 consecutive nucleotides of any of SEQ ID Nos. 1-544;
  - ii. obtaining a sample of cells from a patient;
  - 10      iii. providing a second sample of cells substantially all of which are non-cancerous;
  - iv. contacting the nucleic acid probe under stringent conditions with mRNA of each of said first and second cell samples; and
  - v. comparing (a) the amount of hybridization of the probe with mRNA of the first cell sample, with (b) the amount of hybridization of the probe with mRNA of the second cell sample, wherein a difference of at least a factor of two in the amount of hybridization with the mRNA of the first cell sample as compared to the amount of hybridization with the mRNA of the second cell sample is indicative of the phenotype of cells in the first cell sample.
20. A method of determining the phenotype of a cell, comprising detecting the differential expression, relative to a normal cell, of at least one protein encoded by a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544, wherein the protein is differentially expressed by at least a factor of two.
21. The method of claim 20, wherein the level of said protein is detected in an immunoassay.
22. A method for determining the presence or absence of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-168 in a cell, comprising contacting the cell with a probe of claim 10.

23. A method for determining the presence of absence of a polypeptide encoded by a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-35 in a cell, comprising contacting the cell with an antibody of claim 14.
24. A method for detecting a mutation in a test nucleic acid which hybridizes under stringent conditions to a nucleic acid of SEQ ID Nos. 1-544 or a sequence complementary thereto, comprising
- i. collecting a sample of cells from a patient,
  - ii. isolating nucleic acid from the cells of the sample,
  - iii. contacting the nucleic acid sample with one or more primers which specifically hybridize to a nucleic acid sequence of SEQ ID Nos. 1-544 under conditions such that hybridization and amplification of the nucleic acid occurs, and
  - iv. comparing the presence, absence, or size of an amplification product to the amplification product of a normal cell.
25. A method for identifying an agent which alters the level of expression in a cell of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto, comprising
- i. providing a cell;
  - ii. treating the cell with a test agent;
  - iii. determining the level of expression in the cell of a nucleic acid which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto; and
  - iv. comparing the level of expression of the nucleic acid in the treated cell with the level of expression of the nucleic acid in an untreated cell, wherein a change in the level of expression of the nucleic acid in the treated cell relative to the level of expression of the nucleic acid in the untreated cell is indicative of an agent which alters the level of expression of the nucleic acid in a cell.

26. A pharmaceutical composition comprising an agent identified by the method of claim 25.
27. A pharmaceutical composition comprising a nucleic acid which includes a nucleotide sequence which hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto.
28. A pharmaceutical composition comprising a polypeptide encoded by a nucleic acid which includes a nucleotide sequence that hybridizes under stringent conditions to one of SEQ ID Nos. 1-544 or a sequence complementary thereto.
29. An isolated nucleic acid comprising a portion of a nucleotide sequence of SEQ ID Nos. 36-168 or a sequence complementary thereto.
30. A gene which hybridizes to one of SEQ ID Nos. 1-35.
31. A method for detecting cancer in which one or more of SEQ ID Nos. 1-544 are used as probes, said method comprising:
- i. collecting a sample of cells from a patient,
  - ii. isolating nucleic acid from the cells of the sample,
  - iii. contacting the nucleic acid sample with one or more primers which specifically hybridize to a nucleic acid sequence of SEQ ID Nos. 1-544 under conditions such that hybridization and amplification of the nucleic acid occurs, and
  - iv. comparing the presence, absence, or size of an amplification product to the amplification product of a normal cell.
32. A method of claim 31 in which said cancer is colon cancer.
33. A method for detecting cancer in a patient sample in which an antibody to a protein encoded by SEQ ID Nos. 1-544 is used to react with proteins in said sample.

34. A method of claim 33 in which said cancer is colon cancer.

## Differential Expression Analysis

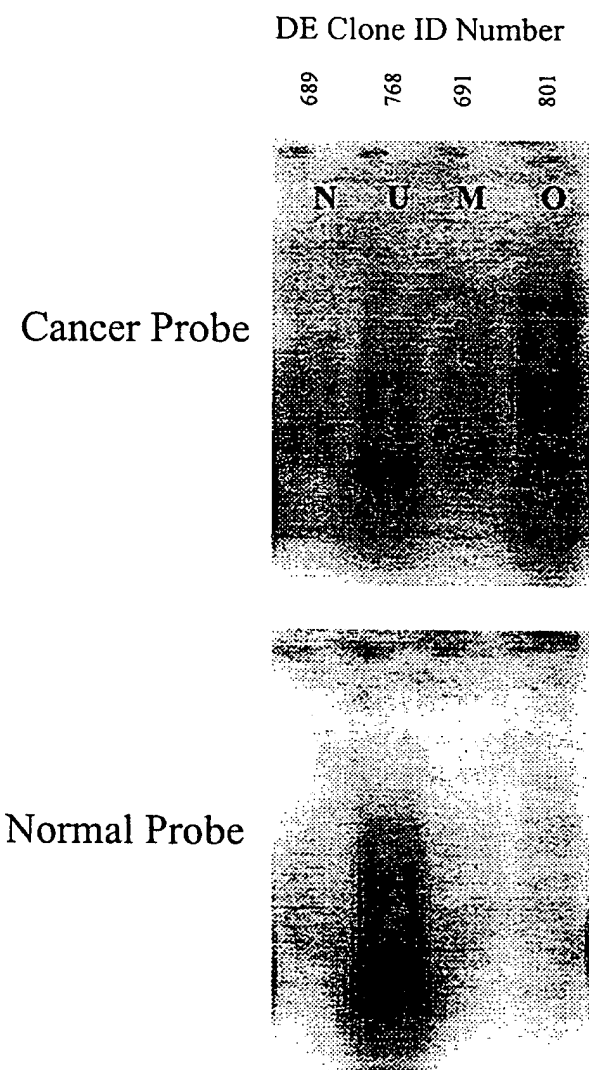


Fig. 1

## SEQUENCE LISTING

&lt;110&gt; BAYER CORPORATION

<120> NOVEL HUMAN GENES AND GENE EXPRESSION  
PRODUCTS: II

&lt;130&gt; CCDNA-260Xq999

&lt;150&gt; 60/117,393

&lt;151&gt; 1999-01-27

&lt;150&gt; 60/098,639

&lt;151&gt; 1998-08-31

&lt;160&gt; 544

&lt;170&gt; FastSEQ for Windows Version 3.0

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&lt;211&gt; 618

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&lt;213&gt; Homo sapiens

&lt;220&gt;

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ggcctnccaa acactgggat tacaggcgtg agccctcccc tgntgatacg nagnggtttt	540
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&lt;223&gt; n = A,T,C or G



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gcagtggcat gatcatggct cactgcagcc tcaacctcct aggc tcaagt gattctctca      120
cctcctcctc ttgagtagat gggacttaca ggcgcagcc accacatgca gataattttt      180
gtattttttt tanaaacagg gttttgccat gttacccaaa ctgggtccca gctcctgggc      240
tcaagagatc tgccctgccc aacctcccaa agtgctggga attacaggca ttgagccacc      300
acaccagccc tgattgtttc ttctcataac tcaactctac tgntgatcct ctttaaatgaa      360
ttttantttc aagtcattct acttttccac tccaaaattt tgatttgggt cttttaaata      420
aattttattt attggaattc tttatttggg gagaaggat catatatcc tttantttct      480
ttggcgngct ttcttttaac tctttgatat ttataatagc tgntttgaaa gctttttntg      540
gtaagtccaa cattngggnc ctcaangctt ttttaatgct gctttttttc ccctattatg      600
gnaaacttcc agttatttta tgctaataag gttcggaaaa      640

```

```

<210> 3
<211> 635
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(635)
<223> n = A,T,C or G

```

```

<400> 3
acactagcat aaatgaagat taagaaataa gtctttccag attattttta ctcaagaatt      60
tgtttcagtg ctaggcaagg atgatcaatt ttagtttgca tatgaagact caaagggaga      120
tgattaaaag cacgtaactc tttgactcac ccctagaagg tctttgatga ggcccagcaa      180
tctggaaaat tatgatataa tattacacaa tgattattta acaatatttt agaagtaact      240
gccatttggg ggtcacagaa caatactaact ctcaattatg ttacccatca acaaattgaa      300
tataattaaa ttatttttcaa aatatatggg ttgagattat tttccaatta aaattgccag      360
gtgaggaaca gcacttttcc attcgcgtgct gaatgtgatg aaatactgga tagtcataga      420
gggtctaccc agatgtccct ttgggagaag tgttgtgggg gaaaatgggc tggttgtgtg      480
caccctaaact accctttaag aacttggtgc tggagccatt aaaaataatt gngctggtct      540
tataaatatg aaaaactttg ggaaatcctt gtgacatcga tgcanttggg ttgggaagtt      600
cctgataaaa atatctaaaa atacacccat tgaaa      635

```

```

<210> 4
<211> 627
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(627)
<223> n = A,T,C or G

```

```

<400> 4
acgcgggggac taagacctca aaagcacagg cgacaaaaat aaaaatagac aaatgggaat      60
taactaagaa gtttctacac aacaaaagaa ataatcaaca gagtaaacag ataatttcca      120
gaacggaaga aaatatgtgc aaactattca tccagcagtg gacaaatacc cagtatatac      180
aagaaactca aacaacaaca ataaaagaca aatcatcccc ttaaaaggag ggcaaaagac      240
aagaacagac atttttcaaa agaagatata caaatgacta acaggatat taaaaatgca      300
caacatcact aatcatcaga gaaatgcaaa ttaaaaccac aatgagatat catcttacc      360

```

cagtcaaaat	ggctactatt	aaagagtcaa	aaaataatag	atcttggcca	ggacatggat	420
aaaagagaac	tcttacatac	tggtggtagg	aatgcaaatt	aacacagcct	ctatagaaaa	480
cagtatngag	attgctcaag	aactaaaaat	agagctatca	tttgcccanc	atnccctgnt	540
gggttctacc	caangaaaag	aaatcatggg	caaaaaaaaa	aaaaaaaaaa	aaagtncttg	600
gcgggaccct	aaggggattc	acccctn				627

&lt;210&gt; 5

&lt;211&gt; 411

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(411)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 5

cgaggtacgc	ggcctggcca	acatgggtgaa	accccgctctc	taccaaagat	acaaaaaatt	60
agccaggtgt	ggtggcatgt	gcctgtagtc	ccagctactc	aggaggatga	ggcaggggaa	120
tcaactaaac	ctgggaggcg	gagattgcag	tgagccaaga	tcgcgctatt	gcactctagc	180
ctgggtgaca	gagcaagact	ccgtctcaaa	aaataataat	aataaaatga	aaataatcag	240
ctgggtgtgg	tggcatgtgc	ctgtagtccc	agctactcag	gaggatgagg	caggggaatc	300
acttaaacct	gggaggcgga	gattgcagtg	agccaagatc	gcgctattgc	actccagcct	360
gatgacagac	ctagactccg	tctccaaaaa	aaaaaaanaa	aaaaaaaaag	t	411

&lt;210&gt; 6

&lt;211&gt; 606

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(606)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 6

accaagtcac	cagacacaag	taaatatggg	ccttgggggt	tcttttcttg	ctgacgcata	60
ttcacacagg	cagcgtgtgc	tgtgtgtgtt	tacaactgtg	tttcttagtc	ttctattcag	120
agtaataaca	gcatgacttc	cctaagatct	gattcagaga	attgaaatat	gccctgagaa	180
aacataagag	gtttttctgg	agaagtgtcc	caagggtaat	attaattgtt	caaggatgtt	240
tcggaaaaag	ttgcaatcat	cactgtggca	aatgaatcta	gggagaggaa	gcatgagtta	300
tttaatgtca	gttactcctt	tccgtaggtt	tttgcccttt	tttggacttt	acacacagcc	360
catttgctat	gaaactatca	gctcaaatag	cangctttca	ngcaggccaa	caatggcaga	420
ctgcattcct	nctactttnt	ccaatcatat	ttatcaagtc	ccattggggag	aatactttca	480
gtagngtca	aantaccgcg	ntncaattgg	aactgcangg	aacctttcag	aaataacnct	540
tnaagaaaga	aataaccctt	canggaanac	cctttingnt	tcactctann	tgggggttnac	600
aagaaa						606

&lt;210&gt; 7

&lt;211&gt; 620

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(620)  
 <223> n = A,T,C or G

<400> 7  
 ccgtggcccc ggccgaaggt ccnctgganc cccgggtggt aattggctgg aggtaaatgg 60  
 tggtaangta ttaaccatct ctatggaaat gnccttttgg ggccctcctg gatttttaaaa 120  
 tgggtcccctg gtttggacnt ttctattaaa gaaatggnca ttttacctaa aatgccnggt 180  
 ctaccttatt aaagancaaa tngnntattn gaccttaaaa taggcatttt tcctaatcat 240  
 aatctggccg gcttaacccc aatcaagata attgggtgcc cnttatgaat ttgaagttag 300  
 tgatagcctc cttgtaaggt gctaccctna tggggataga gaccccagct actantaatt 360  
 ngggaaaatg gtttaaggat ttgggaaaag tactctttta aaaacatatt ggccacagaa 420  
 ancctaggct gaattacnng gattgataat tttgnaanta atttctana atgggcnnngc 480  
 tggatgaaaa aatggcctcc tcnttttccc tgggaaccagc ngctttttgc ctaaacntta 540  
 ncctttttta gttgaacctt gggaccacct aatnggcntc acaattccct ttttcctttc 600  
 cttttttttt gcccgaaggn 620

<210> 8  
 <211> 263  
 <212> DNA  
 <213> Homo sapiens

<400> 8  
 gcgtgggtcg cgcccgaggt accacttttc ttattgcaac tcaacaagtg gcaattgggtg 60  
 atgaaaagtc aagtggggaa cccagtctgt ggggaacaaa tggaataact tacctgtcac 120  
 cttgtctaac cgggatgcaa atcctcaagt ggtattaaaa agcatacagt gttttataac 180  
 tgtagttgtg tggaaagtaa ctggtctcca agaacagaaa ttactcagcg cacttgggtg 240  
 aatgcccaag aaataatact tgt 263

<210> 9  
 <211> 590  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(590)  
 <223> n = A,T,C or G

<400> 9  
 acaacagggt tcttgcacga agcttcatgc tttcccagac atttactcaa gggaacgtgg 60  
 gagaggagg aggaggagg gagctgggag tgataagcag atgttacaca tgtttttccct 120  
 ggaaagatca cccactttt tctaatttcc cagaattaaa agaattgtatt ttatctgtat 180  
 taccatggaa attactagta aacttggtt tttttccctc ttttctaaag tttccaaaaa 240  
 ctttcaaaaag tgttcaaaga aattttcttg aacaatttta atatgtttga tttctcattt 300  
 ggggctggaa tatgtgtatt ctttttaatt tttttacttc atttattaga agaagtttct 360  
 aatatgtgta ggaatacaat tttaaatgta agattatata gatgtagata tagatagata 420  
 gatatatgta gatatatnga tttatgtcnc aatatcactn taaggcatte ttcttccatc 480  
 ctttttatatc tncctaaact ggtntnatgg gacctgtcct gcctgtagggt aaaanccttn 540  
 taatttccct gaaaggctac cncctttctan ggggncaacc aattgggagn 590

<210> 10

<211> 609  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(609)  
 <223> n = A,T,C or G

<400> 10  
 cgagggtacgt ttttcaatgt tttaaaaaat tgaaagggag tataatgttt cataacacat 60  
 gggaaattat gtgcagctca aatttcaagt atccataaat aaagttttat tggaacacag 120  
 ctacgctcac tcattagata ttgtctatgg ctgtttttgt gcaaaatggc aganttgggt 180  
 tcagagttag caacagagag cttgtagcct gcaagcctag agtatattact atctggattt 240  
 ctacagaaaa aaaaaattat tgccccctgc catcacgtct gactgatagc ctgagaaaagt 300  
 atgcattaaa agaaagttac ctaccctgac cccatgagaa tgaatttgaa aagaaccnag 360  
 atgtggtaga agcagatagg ctatgaaagt ttcagaaggg tancatcact gtgggcnagg 420  
 atattcaaga aaagacttca nggaaaatgt nggggtttga actggnccttg agtaggagtt 480  
 naacttangg gaactggntt taggtngcca ctttaaggct gtcaaanatc atggcccaac 540  
 attcantttg gcccaaattc cccangngcc ttaaaaaattt ggacatggct tgggttgggg 600  
 gncaccctt 609

<210> 11  
 <211> 578  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(578)  
 <223> n = A,T,C or G

<400> 11  
 acgcgggatg tagtcagagg aggccctgac atctgcaggg cagcatgggt caaaccaaaa 60  
 agacttttct gaggttgggc gcagtggctc acgcctgtaa tcccaacact ttggaaggcc 120  
 agtaggggag gatcacctga ggtaggaga ttcgagacca tccctggctaa cagggtgaaa 180  
 ccccatctct actaaaaaaaa atacgaaaaa aattagccag gcgtgggtgac ggggtgcctgt 240  
 agtcccagct actagggagg ctgaggcagg agaatgggtg gaacccggga ggcagagctt 300  
 gcagtgaacc gagatcaggc cactgcactc cagcctgggc cacaagagcg agactctgtc 360  
 ttaaaaaaaaa caaacaaaca aacacacaca cacacacaan aagacaaaaa taattagcag 420  
 ggaatgctgg tgcattgctg tatcccaact ctgaggaggt tgaagcagga gaatcacctt 480  
 gacccatnag caatgttcat gaacttagnc cngccntgga cttcancaag gcaccgagta 540  
 aganttcntt tnaaaaaaaaa aannnaaaaa aaagtcct 578

<210> 12  
 <211> 581  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(581)  
 <223> n = A,T,C or G

```

<400> 12
actttttttt tttttttttt tttttttttt gggacggagt cttgctctgt tgcccaggct      60
ggagtgcagt ggcgccatct tggtcacta caagctccgc ctcccgggtt cacaccattc      120
tcctgtctta gcctcccagc gcccgccacc gcacccggct aattttttgt attttttagta      180
gagacagggt ttcaccatgt tagccaggat ggtctcgatc tcctgacctc gtggcccacc      240
tgccttggcc tccaaaagtg ctggaattac agtcgtgagc caccacgccc ggcctaaacc      300
atttctcttg acaacactct ggattttatt tctggccaga taccatttat caattttacc      360
atcaagaata agataatcaa aataataatc aagttttata ttagacttat gaagattctt      420
gcacctttga aattacagct atctcactag ttnattctcc tctctcatat tttattacng      480
acntccagga agacaaccaa cacctttaaa agttggctga gcatttttta nggagaccct      540
taggtaanag ggnccctnggc gggaaccctt taggggnaat n                          581

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```

<210> 13
<211> 607
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(607)
<223> n = A,T,C or G

```

```

<400> 13
ggtactggaa caactataag acccctgttc agattaagga atttggtgca gtttcaaaag      60
tagacttttc tcctcagcct ccatataatt atgctgtcac agcttcctca agaattcaca      120
tttatggcgc ataactccaa gaacctataa aaaccttttc tcgatttaaa gacacagcat      180
actgtgctac ttttcgacaa gatggtagat tgcttgtggc tggcagtga gattggtggag      240
ttcaactttt tgatataagt gggaggggctc ccctcaggca gtttgaaggc catacaaaag      300
cagttcatac agtagatttt acagctgaca aatatcacgt ggtctctggg gctgatgatt      360
atacagttaa attatgggat attccaaact ccaaagaaat ttttgacatt taaaggaaca      420
ctctgattat gtgangtgtg gatgtgctag caaactttta tccggatctc tttataacca      480
gggacatatg atcatactgn gaagatgttg gatgcncgaa ccnattgaaa agtggctctt      540
ccgttgagca tggccnncag tngaaantgn cctacttttc cccttgggaag gctttgggggt      600
annangg                                           607

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```

<210> 14
<211> 599
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(599)
<223> n = A,T,C or G

```

```

<400> 14
ggtactttca aaatataaca attttcgttc tcccatataa caggggggcta acaagaaaac      60
caaaaataaa taaaaagaga aaatttataa ataagtaaaa aataaaaaaa tattttttaa      120
aagcagcctg ggcaagagaa gtgggtgggt ttaggagaat ccctttcgaa aaattcagag      180
cattattatt aatcgttctt aaattaaatg cagggccaag catgctgcac gtggaatctg      240
gacaattttt tgataaaact taaggctgct aaataattta cagaaaactgt gaatgcattt      300
tcatttttac aggcaaaaga gaaaatattc aagattgcat agcaatttta ttttttgaaa      360

```

tggttatcct	aaagaatttc	cttaaattca	gatttttgcaa	aattcctact	ctncaagtca	420
tcaagtgaac	actaaaagca	actttctcgt	gaatcagtgg	acttttacga	ggcatgcatt	480
tttcataaat	ctaggccaag	tgacctaat	gngattaaat	cttaatcatc	ctgngattct	540
ggctattaan	atgggtttta	ancngtaaaa	atnctttnaa	aaagccgta	cttnccgan	599

<210> 15  
 <211> 457  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (457)  
 <223> n = A,T,C or G

<400> 15						
ggtacttttt	tttttttttt	tttttttttc	gaaatgaaca	aatatatttatt	tatctttttat	60
aacaagtaag	gcaatggtgc	ttaaaggaag	acaaacaaac	ataaaaagatt	ccgttgacaa	120
tgcatttttt	catntgttcg	gcacaatgct	tttgtcataa	tggagatgtg	acagcaaact	180
ttccaggaca	ttcagtcctc	ggnggcagca	cttagggcan	atgactggcc	gctcaaattc	240
tctatnttgt	ttcaggacag	tggaaaagct	tatanatgag	gccaaaagcac	caggtagggtg	300
gaagggtctt	gtatcggttc	gaaccccgac	agcgcgccaa	cagacaacac	naggcagtgg	360
ggagcaacat	gctgttttaa	tgancgcctg	ggtgcangcg	tgctgaggct	gaaaatggca	420
taacccccgc	gtcctgcnng	gcgggcgttc	aaanggn			457

<210> 16  
 <211> 643  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (643)  
 <223> n = A,T,C or G

<400> 16						
ggtacaatct	agctgaaatc	atatacaagt	aagtaggtgt	ggactttttac	tgctgagcta	60
aagtttatgt	ttatatatgt	tttattcttt	aagctaaaca	aacattcaga	taacattcta	120
tgcatttttt	gaagcatagg	gttagtaatg	aggacttaga	ttttttaatt	aaacaattca	180
gtaactatat	aaaaagaaaa	ggagtccctt	atgaataaat	attaaaatta	aaagaaatag	240
gcaactataa	aagtaagtat	ttttaataat	ggcattgatt	ttagtaagaa	atcaattagg	300
ctgggctgga	aagaaaaact	ggcttaatat	aaagtagttt	taatatggca	aatattcttc	360
ttaaaattgn	ggccctggaa	tatcatttct	gcctattgct	gatgctaagg	natcaactgn	420
gccaagtatt	gggctgntcc	acaggtggga	angagtagca	acattttgng	gatttttttt	480
ttttttttaa	accggagaat	accggccag	gggntcaagn	ctgnatccac	antttgggag	540
nttagccgga	naanccttgg	anccggagna	aaggttnaan	gagncaaaat	gngccatggn	600
ttccanctgg	ggacccgggg	gnaactcttt	taaaccnaaa	aat		643

<210> 17  
 <211> 336  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(336)  
 <223> n = A,T,C or G

<400> 17  
 ggtaactttga taaatgtaga aagattattt aattctggct tggtagcgtg gctcatgcct 60  
 ataatcccag cacttcagga ggctgagggt ggtggatcac ttgagctcag gagtttgaga 120  
 ccaggcgaaa cctgtctcc acaaaaaatg caaaaattgc tggacatggt ggacatgcc 180  
 tgtagtccca gctacttggg aggtgaggc aggaggatag cttgagccca ggaggtcaag 240  
 gttgcagtga gccgagattg tgccactgca ctccagcctg ggcaacagag caagaccctg 300  
 cctcaaattt aaaaaaaaaa aannaaaaaa aaaagt 336

<210> 18  
 <211> 614  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(614)  
 <223> n = A,T,C or G

<400> 18  
 ggtacactct tcttcgcctt tgagtgcgcg tacctggctg ttcagctgtc tcttgccatc 60  
 cctgtatttg ctgccatgct cttccttttc tccatggcta cactgttgag gaccagtttc 120  
 agtgaccctg gagtgattcc tcgggcgcta ccagatgaag cagctttcat agaaatggag 180  
 atagaagcta ccaatggtgc ggtgccccag ggccagcgac caccgcctcg tatcaagaat 240  
 ttccagataa acaaccagat tgtgaaactg aaatactgtt acacatgcaa gatcttcagg 300  
 cctcccgggc ctccattgca gcatctgtga caactgtgtg gagcgcttcg accatcactg 360  
 cccctgggta gggaaatgtg ttggaaaaga ggaactaccg ntacttctac ctcttcatcc 420  
 tttctctttt ccttccttac aaactaaggc tttngcttcc aacatcgcta tgtgggacct 480  
 aaaatctttg aaaattggct ttttggana cattgaaaga aactcctgga aactggctca 540  
 gaaagnccta attgcttctt tacactttgg nccnncnggg actgatggga tttcanactt 600  
 tcttgaggact ttna 614

<210> 19  
 <211> 296  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(296)  
 <223> n = A,T,C or G

<400> 19  
 actttttttt tttttttttt ttttttttgg gatggagtct cactntgttg ccaaggctgg 60  
 agtgacgtgg cataatttcg gctcacttca acctctgcct cccgggttca agcaattctg 120  
 cgtcagcctc cggaggagct aggactacag gcatgcacca ccagcccaa ctaatttttg 180  
 natttttagt agagatggag tttcaccata ttgaccaggc taggctggtc ttgaactcct 240  
 agcctnaggt gatctgcccc cctnagcccc ccaaagtacc tcggccgtga ccacgc 296

<210> 20  
 <211> 565  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(565)  
 <223> n = A,T,C or G

<400> 20  
 accaattata atgcattatt atgaaatatt taaaatgggg aatccaagat gacatagttt 60  
 ttaactcatc cacatactgg aagtttagag aaactcagaa tttcttattt ctttttcttt 120  
 ttctccata gcataaaagc tttgctaata agaataaata tatatattgg agtttttagtg 180  
 tttgatcctg tgatcagttg taacctatgtg tcataaaact ctctcacaga ttccatcttt 240  
 cccaaatctt ctgatcataa cacagattgc catatagact tcccttgtaa ggagaatatg 300  
 ctggccataa ggcaagcana agtgaacttg cagtttcact tcttggaat taatgcattt 360  
 gcattgactt ctataannta atctctcctg aatttttttg cttagtcaac ttactgtgtg 420  
 caaagncaac agnaaattgt ctttggttna acttttaaca ggncaattta taaattgggt 480  
 tgaagaagcn tcccnaaatt ttttattgaa ggctgaattc aagcctcctt taaaatggnc 540  
 atngnataan ggggaatttat tgtng 565

<210> 21  
 <211> 582  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(582)  
 <223> n = A,T,C or G

<400> 21  
 ggtactggaa caactataag acccctgttc agattaagga atttggcgca gtttcaaaag 60  
 tagacttttc tctcagcct ccatataatt atgctgtcac agcttcctca agaattcaca 120  
 tttatggcgc atactcccaa gaacctataa aaaccttttc tcgatttaaa gacacagcat 180  
 actgtgctac ttttcgacaa gatggtagat tgcttggtggc tggcagtgaa gatggtggag 240  
 ttcaactttt tgatataagt gggagggctc ccctcaggca gtttgaaggc catcaaaagc 300  
 agttcataca gtagatttta cagctgacaa atatcacgtg gtctctgggg ctgatgatta 360  
 tacnagttaa atttatgggg atattncaaa cttccaaaga aaattttgnc catttaaaag 420  
 aacactctng antatggnga aggtgnggnt tgtgcctaac caaacttaat tccgggatct 480  
 tttttatnta ccnggattcn tttggatctt ncnggtaaaa aanggttgga tccccnaac 540  
 nnattgaaaa nngttctntc cnnttgacct nggccanccn ng 582

<210> 22  
 <211> 349  
 <212> DNA  
 <213> Homo sapiens

<400> 22  
 actttttttt tttttttttt ttttttgaga tggagtcttg ctcttggtgc ccaggctgga 60  
 gcaacctccg cctcctgggt tcaagtgatt ctctgcctc aacctccga gtagctggga 120  
 ttacaggtgc ccgccaccat gccgagctaa tttttgtatc cctagtaaag acggagtttt 180



gccatgttgg	ccaggctgg	ctcgaactcc	taacttcacg	atctgctcac	catggcctcc	240
caaagtgtg	ggattacagg	cgtgagccac	tgtgcccac	cctcttttcc	tttttcaa	300
gtcaatggaa	agttgattgg	aaaggacaat	ttggctacct	tttggtacc		349

<210> 23  
 <211> 576  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(576)  
 <223> n = A,T,C or G

<400> 23						
acctgttctt	ggagccaatg	tgactgcttt	cattgaatca	cagaatggac	atacagaagt	60
tttggaaactt	ttggataatg	gtgcaggcgc	tgattctttc	aagaatgatg	gagtctactc	120
caggtatttt	acagcatata	cagaaaatgg	cagatatagc	ttaaaagtgc	gggctcatgg	180
aggagcaaac	actgccaggc	taaaattacg	gcctccactg	aatagagccg	cgtacatacc	240
aggctgggta	gtgaacgggg	aaattgaagc	aaacccgcc	agacctgaaa	ttgatgagga	300
tactcagacc	accttggagg	atttcagccg	aacagcatcc	ggaggtgcat	ttgtggtatc	360
acaagtccca	agccttcctt	gcctgaccaa	taccaccaa	gtcaaatcac	agaccttgat	420
gccacagttc	attaggataa	gattattctt	acatggacag	caccaggaga	taattttgat	480
gttggaaaag	ttcaacgtta	tatcataaga	ataatgccag	tattcttgac	taagagacag	540
ttttgatgat	ctcttaagta	aatactctga	ntgccn			576

<210> 24  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(618)  
 <223> n = A,T,C or G

<400> 24						
acttaaaata	aagttaacaa	ttacaacaga	cccaatcaca	gacaatacca	gcgtagaaat	60
attaactcca	gaattatgac	ttttatcagg	agtaggagta	ggagtaggag	taggtgtagg	120
atcaatgtca	tcaggatttg	cttgagggat	aaacaaagtt	acttgtgcaa	tgttggatac	180
ttttgatgtc	aaattgcttt	tatctatact	tttaatggca	ataaatatgt	gggttgcat	240
ttcttctgag	atattttctg	gtttaaatgc	aaagctttcc	ttggagttgg	cctcctttgg	300
tgacagatca	gtagtattta	cttgaagagc	atcatcaaaa	ctgtctctta	gatcaagaat	360
acttgcactt	attcttatga	tataacgttg	aactttttcca	acatcaaaa	tatctcctgg	420
tgctgtccat	gtaagaataa	tcttatcctc	atgaactgtg	gcacaaaggt	ctgtgatttg	480
acttgggtggg	tattgggtcag	caagggaagg	cttgggactt	gtgatccaca	aatgcctccc	540
ggatgctgtc	ggctgaaatc	ctccangtgg	ctgagtatcc	tcacaaatc	aggtcttggc	600
nggttgcttc	aattnccc					618

<210> 25  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 25  
 acataccacg ctgggtagtg aacgggggaaa ttgaagcaaa cccgcccaaga cctgaaattg 60  
 atgaggatac tcagaccacc ttggaggatt tcagccgaac agcatccgga ggtgcatttg 120  
 tggntncaca agtcccaagc cttcccttgc ctgaccaata cccaccaagt caaatcacag 180  
 accttgatgc cacagntcat gaggataana ttattcttac atggacagca ccaggagata 240  
 attttgatgt tggaaaagtt caacgntata tcataagaat aagtgcaggt attcttgatc 300  
 taagagacag ttntgatgat gctcttcaag taaatactac tgatctgtca ccaaaggagg 360  
 ccaactccaa ngaaagcttt gcnttttaaac cagaaaatat ctcagaagaa aatgcaaccc 420  
 acatatttat tgcctttnaa agtatagata nagcaatttg acatcnaagt ntccacattg 480  
 nacaagtnac ttgggttatc cctcagcaaa tctgatgaca ttggatctac tctactctac 540  
 ttctantttc gaaaaaggat aatccgngt aaattttccc tggattgctg ggatg 595

<210> 26  
 <211> 361  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(361)  
 <223> n = A,T,C or G

<400> 26  
 actttttttt tttttttttt ttttttctga gcatattata tctaattttt gaaggttgta 60  
 ttttctccct tgttttaatt ttctgcanat acttttttct tttttacttt cccaattag 120  
 ttgtttctg actttcttcc tcaatctctc ctgaaccatt gtttnttttt aagatcagag 180  
 cagattctta ggaactttta aaactgtatg tgggtgggat tgtcacctan agtgcttttt 240  
 tggagagtaa ttggatggng tgataattaa ttttatgtgt caatttgaca gggctctggg 300  
 gtgtccagtt atttggttaa acattatttc tgggtgtgcc taaaagggtg tcccgcgtag 360  
 c 361

<210> 27  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 27  
 acctgttctt ggagccaatg tgactgcttt cattgaatca cagaatggga catacagaag 60  
 ttttggaact ttggataat ggtgcaggcg ctgattcttt caagaatgat ggagtctact 120  
 ccaggatatt tacagcatat acagaaaatg gcagatatag cttaaaagtt cgggctcatg 180  
 gaggagcaaa cactgccagg ctaaaattac ggcctccact gaatagagcc gcgtacatac 240  
 caagctgggt agtgaacggg gaaattgaag caaacccgcc aagacctgaa attgatgagg 300

atactcagac	caccttggag	gatttcagcc	gaacagcacc	cagaggtgca	tttgtggtat	360
cacaaagtcc	caaacccttc	cttgccctgac	caataccac	caagtcaaat	cacagacctt	420
gatgccacaa	gtcattagga	taaaatatcc	ttacatggan	gcccangaaa	taattttgat	480
gttngnaaag	ntcacctgt	ntataanaat	aaggccagtt	ttttgactaa	aaaaagtgtg	540
aagagctttc	aagaaancta	tgatttgncc	caagggggccc	tccaggaagn	ttgttttacc	600
caaaattttt	a					611

<210> 28  
 <211> 443  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(443)  
 <223> n = A,T,C or G

<400> 28						
cgtgcccaca	gcttggcaag	ttttcggtt	taaccacgca	caccaccacc	accaccatnc	60
taaataactt	actgcatcct	caaagcctgt	tttatgggga	ttgcatggtt	ttatttgaaa	120
tcacgcctgt	aatccancca	ctttgggagg	ccaaggcagg	cagatcacaa	ggtcaggaga	180
tcgagaccaa	tctggctaca	cggtgaaacc	ctgtctctat	taaaaaaaaa	acaaaacaat	240
tagccaggca	tggtggcagg	cgctgtagt	cccantact	cgggaggctg	angcaagana	300
atggcgtgaa	acttggaggc	ggagcttgca	atgagccgag	atcgcaactg	ctgcacttna	360
acctgggcaa	caaaacgaga	cttcatntct	nttttnnaaa	nnnaannnnn	nnnnnnnnng	420
tcctttggcc	cgaccacnct	tan				443

<210> 29  
 <211> 403  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(403)  
 <223> n = A,T,C or G

<400> 29						
ggtacttttt	tttttttttt	tttttttttt	gagtgcata	catcacccca	acttcgggtt	60
tttacatttt	aatttgtatt	gnttttaatt	tattttgagg	caatgtctca	ctatgttgcc	120
caggctgggtc	tcaaataaaa	acaatgctat	caatcacatt	cttgcatagg	atatgtgtca	180
gtaatcctcc	aaaatgaaca	tganaaatgg	aattgtcaag	tcatagatta	agtgcataata	240
acttttgaat	agatagtata	aattttttcc	ccaaatgaga	attttatatt	ctcactggca	300
acatgaaaat	agccatctct	ctataatctt	atcaaccctc	gatagtgtca	ttttttaatt	360
tataattatg	agtgaataatg	gtcctgccc	ggcgggctc	cga		403

<210> 30  
 <211> 615  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(615)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 30

ggtacagtgg	tagcatccaa	atgggcaaac	gtagtagcag	gggcagggtc	agtcaagtca	60
tcagcaggca	catagatagc	ctgtactttg	taatattctt	cccacccttg	agaatggact	120
ttgtaagatc	cgccccctgc	ccacaaaaaa	atttctccta	actccactgc	ctatcccaaa	180
cctataagaa	ctaattgataa	tcccaccacc	ctttgctgac	tctcttttca	aactcagcct	240
gcctgcgccc	aggtgattaa	aaagctttat	tgctcaccca	aagcctgttt	ggtggtctct	300
tcacacagac	gcgcgtgaca	gaaaccactt	gaagcccggg	cgcgggtggc	caggcctgta	360
atcccagcac	tttgggaggc	tgaggtgggt	ggattacctg	aggtcangag	ttcgagacca	420
gcctgaccaa	catggtaaaa	ccctgtctct	actaaaaatc	aaaaaaanta	accnngggtg	480
gtggnnggca	cctgtaattc	agttcttggg	accttangca	ngaaaatcct	tgaacttgga	540
ggcggaggtg	catanttgaa	acaaaccttg	nctcaacctg	gnaacaaaat	aaaaatccgn	600
tnaaaaana	aaaaa					615

&lt;210&gt; 31

&lt;211&gt; 485

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(485)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 31

acgcggggat	aagctacaac	ataaacacat	ctaggttctt	gttcttagaa	tacagcatga	60
agaatttgct	ttcttctttc	ttcctaacat	tttcatgtga	gatccagaaa	ggacacattg	120
tctctggcca	ttcgaagaaa	gaaagaaaga	aagaaaaaaa	aggtatttag	agacagagag	180
agaaaaaggc	tgaaatgggt	tcgctgggtt	ctaaaaatcc	gcaaaccaaa	caagcccaag	240
ttcttctttt	gggacttgac	tcagctggga	agtctactct	cctttataaa	ttaaagcttg	300
ctaaggatat	taccaccatc	cctacaatag	gtttcaatgt	ggaaatgac	gagttggaaa	360
ggaatctttc	actcacagtc	tgggatgttg	gaggacagga	aaaaatgaga	actgtttggg	420
gctgttctgt	gagaaccena	tnggctngtg	tatgtgtgga	cagtccttcg	gcccgaaccc	480
cttan						485

&lt;210&gt; 32

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(780)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 32

cgagggtacgc	gggtgtctag	accttatgtc	aaaataagcc	caattgtatt	aaagagtatt	60
aaattgtatt	aagaataaaa	acacatggcc	gggcacgggtg	gctcacgcct	gtaatcccag	120
cactttggga	ggacgagatg	ggcggattac	aaggtcagga	gattgagacc	atcctggcta	180
acatggtgaa	accccgctct	tactaaaaat	acaaaaaaa	aattgtccag	ccgtgggtggc	240
aggtgcctct	agtcccacta	ctccagagct	gaggcaggag	aatgatgtga	acccgggagg	300

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canagcttgn agtgagccng agatctcgcc actgcactcc ggcctaggcg acagagcgag      360
actctgtctc anaaaaaaat aatgantaaa aaaanaagtc ctgcccggcc ggcgntcnaa      420
nggcgaattt cancacatgg cngcngttac tatggatccn actcgggtcca anctggcgta      480
atcatggcat agnttttntct gtggnaaatg gtatccgtnc aantcncna attcaaccgg      540
agcttaannn ntaacctggg gcnatnnnnn nctacttcat tattgcntnc ntatggcgct      600
tncattggaa ctnttgcnc tgnntatnate gccnccngg aaagnnttnn ntgggncctt      660
ctctgttann atctnnggct tngttgggag gntnctntna gnggntngtt tnatnggtcc      720
ngnaaatttc agcctangnc antnagcctn ttgnttaate tccnactnna aaaaataang      780

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&lt;210&gt; 33

&lt;211&gt; 742

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(742)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 33

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acataccagg ctgggtagtg aacggggaaa ttgaagcaaa cccgccaaga cctgaaattg      60
atgaggatac tcagaccacc ttggaggatt tcagccgaac agcatccgga ggtgcatttg      120
tggtatcaca agtcccaagc cttcccttgc ctgaccaata cccaccaagt caaatcacag      180
accttgatgc cacagttcat gaggataaga ttattcttac atggacagca ccaggagata      240
attttgatgt tggaaaagtt caacgttata tcataagaat aagtgcagat attcttgatc      300
taagagacag ttttgatgat gctcttcaag taaatctact gatctgcacc aaaggaggcc      360
aacttcaagg aaagctttgc atttaaccan aaaatattta taagaaaatg caccacata      420
ttataccatt aaaagttinga taaaacantt tgcccaaaaa gtttccacca tggacaagta      480
acttggttat cctnagcaat cttgtgcctt gattactcnn ctctattcta tcctgtnaaa      540
gcntaatctg agtaaaattt nccctggntt gtggattggc tngtnatgta atttnttaag      600
nctggcngac cncataggnaa tnnccctggg cgttangncc gtngccantt gtattngtaa      660
tttctngaag gtnttcnnn nntaccngt aagnatgggn tnggnnatnn atnttttncn      720
tnttnatnnn cntnnannnn tg                                     742

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&lt;210&gt; 34

&lt;211&gt; 763

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(763)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 34

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ggtcaaatga ggaataatga ggaacaaaaa ccatacatat aagaggggatg gcacagacct      60
tgtgacaaag tggctctgaa atttctggag gggaaatgaa taagaataac cgagatagtt      120
atgcttggag gaagaggaag atcaagggtgt cctaacctac cagaaactaa gacttatgaa      180
accttagtca ttaaaatatg tagtattagt tcagaaatag taaataaatc aatgtaactg      240
aatggaacct gggacaaaat atagctacat gtaagatctg ggtatatgct ggaggtgaca      300
taacaaatga agagaaacaa tggactattc aaagctgtgt tgctatcttt attggcaaca      360
aatatgggaa aaaatnaaat gagatcctat tcacatgaat gacaaaaata aatgccatat      420
tgattaaacc taaatatgac aaggaaggcc tcaaatttta gaaaaaaatg ccaaatnta      480

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cncattggga	gataattcat	taacaagacc	aanaaccnta	aggaaagatg	ntaatttnga	540
tatattaaga	tttactatgt	ttataaatca	aggatagtcc	cgcttaagan	actttctttt	600
atthtttaatt	aatattatta	atatttgana	cttgcttgnt	tnggtgaacc	ggtaatttgg	660
tattnacctt	ctccggttan	gattnnctaa	ncctgtgnt	nngttgnncc	ncncnatttt	720
tntacagttt	ttgcgcgnta	ttncnggnng	cccccnngn	ngg		763

&lt;210&gt; 35

&lt;211&gt; 767

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(767)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 35

acaggggaat	ggaatggaat	ggaatgcaat	ggaatggaat	catccgtaat	ggaattgaaa	60
ggaatggaat	ggaatggaat	ggaatggaat	ggaatggaat	ggaatcaact	cgattgcaat	120
cgaatggaat	ggaattgaac	taacccgaat	agaatcgaat	ggaatggaat	ggaacggaac	180
ggaatggaat	ggaatggaat	ggaatggaat	ggaatggaat	ggaacggaac	ggaatggaat	240
ggaatggaat	ggaatggaat	ggaatcaacg	cgagtgcagg	ggaatggaat	ggaatggaat	300
gcaatggaat	ggaatcttcc	ggaatggaat	ggaatggaat	ggaatggaat	ggaatgaaat	360
gcaatggatt	caactcgatt	gcaatggaat	ggaatanaat	ggaatggaat	ggaatggagt	420
ggaataattc	naatagaatg	gaatggaatg	gaatggaacg	gaatggaccg	gatggaacca	480
attgtaattg	aatggaattg	atggaatgga	atggaatcac	cctagtcaan	ggaatgtatg	540
gaccggattc	aatgaatgga	tattccgnat	ggatggatgg	gaatgaattg	atgattggat	600
ggatggatca	ccatccatga	agattgatga	tggatgatgc	cacccatgat	gattatgnat	660
tagngtnata	tctncatnna	ggatgntncn	attatgngnt	gatgacatga	ntannccnnc	720
nctttnancn	tatttttttg	ggnccccctc	ccagttgntt	taaannn		767

&lt;210&gt; 36

&lt;211&gt; 608

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(608)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 36

acatatagtc	aacgaaatat	tcaaagaata	actttatata	ctcttgttct	ttaaattcta	60
tctctctttt	cagaattctt	ccatttaagt	ttgggtatth	tcttagtttc	aacagatgaa	120
cagaagactt	cattgaacat	tttgacagta	agctactaga	gaccaattat	caactggtgc	180
tacacatgct	gtgttatctc	ccttactatt	aaactataac	cctctcttgc	tatttttgtt	240
catgcatcac	caaccaaact	tcattttttc	taataaaaaa	taaatatata	aagaagacac	300
tgacaggcat	atattcacia	gatctcaact	tcttaaaaaca	taagtatggg	tatatthtatt	360
tctctcaaat	gcatacnaga	caataattac	ncagcaacca	atcttttggt	caacaatgat	420
ttgantcata	agcatttggg	aattacataa	tttcatatca	atanccctgt	tttttnaata	480
cagaagtaaa	aaanccccaa	taaccaatct	taaatttcna	ttatccccct	acctccaacc	540
tttnaaagg	cccaccgggc	cttttcnnc	attaatttgg	tnaaactggg	gttnaaaacc	600
gcctnccn						608

<210> 37  
 <211> 245  
 <212> DNA  
 <213> Homo sapiens

<400> 37  
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 cgaagccagc ctggctttcg aaaacatctg ggctgctgg agaaaaagaa agattacaaa 120  
 cttcgtgcag atgactaccg taaaaaacia gaatacctca aagctcttcg gaagaaggct 180  
 cttgaaaaaa atccagatga attctactac aaaatgactc gggttaaact ccaggatgga 240  
 gtacc 245

<210> 38  
 <211> 630  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(630)  
 <223> n = A,T,C or G

<400> 38  
 actacactga attcaccccc actgaaaaag atgagtatgc ctgccgtgtg aaccatgtga 60  
 ctttgtcaca gcccaagata gttaagtggg atcgagacat gtaagcagca tcatggagggt 120  
 ttgaagatgc cgcatttgga ttggatgaat tccaaattct gcttgcttgc tttttaatat 180  
 tgatatgctt atacacttac actttatgca caaaatgtag gggtataata atgttaacat 240  
 ggacatgatc ttctttataa ttctactttg agtgctgtct ccatgtttga tgtatctgag 300  
 caggttgctc cacaggtagc tctaggaggg ctggcaactt anaggtgggg agcagagaat 360  
 tctcttatcc aacatcaaca tcttggtcag atttgaactc ttcaatctct ttgcaactcaa 420  
 agcttggttna gatagtttaa gccgtgcata aattnacttc caaatttaca tactctgctt 480  
 anaaatttgg ggggaaaaat taaaaaatnt aattggccag gatnttgna atttgttata 540  
 atgaatgaaa cattttngna ttaaaaaatca nattacttnt aanctttgat aaantaaggc 600  
 atggntgggg gtaattgggt tttttgttcc 630

<210> 39  
 <211> 626  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(626)  
 <223> n = A,T,C or G

<400> 39  
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 tcaaccagc catgcaatgc caaataatag aattgctccc taccagctga acagggagga 120  
 gtctgtgcag tttctgacac ttgttggtga acatggctaa atacaatggg tctcgtgag 180  
 actaagtgtg agaaattaac aaatgtgctg cttgggttaaa atggctacac tcatctgact 240  
 cattctttat tctatttttag ttggtttgta tcttgcttaa ggtgcgtagt ccaactcttg 300  
 gtattaccct cctaatagtc atactagtag tcatactccc tgggtgtagt tattctctaa 360

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aagctttaaa tgtctgcatg cagccagcca tcaaatagtg aatgggtctct ctttggctgg      420
aattacaaaa ctcaaagaaa tgtgtcatca ggagaacatc ataacccatg aaggataaaa      480
gccccaaatg gnggtactga taataacact aatgcnttaa gatttgggtca ccctctcncct      540
aagggagccc attgagccna ngngnctaaa gcctcactact ccacctgaat ggtaggaga      600
aaatttatcc caaaaaaaaa aaaaan

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<210> 40
<211> 645
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(645)
<223> n = A,T,C or G

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<400> 40
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ttgcagtatt ttatttgcct ctttgacggc tttttttttt tttttttttg agacagagtc      120
tcacactgca ctccagcctg ggtgacagag tgagagactc cgtctcaaaa atgaatgaat      180
gaatgaatga atgaatgaac aaacgaacaa ggtgggtttaa tgtcagaaaa ctccctaagc      240
atttgctccc caaacctttc atgtttttca agaagccttt attacataaa ggggaataga      300
attaaaatgt ttctttataa gaaaaatata catattttgtg ttcttggccc cattaaaact      360
aatcagtagt cctttggcca aaaaatagtc aacaaganaa ctgggtatga ntccnggcnt      420
tactcctgnt cataagtng gatgcntgtg tctganccna actgnetcaa ctngagctct      480
tgggggtata caanaaaccc gngttttcat gaaacccctg ggcctntata aaagggtttcc      540
cttggggggc ccaatgctta ttntngattn gggttccaaa anntngcaat tggnataggt      600
gcttgaaata accccctttt agtnnaattc cnacaaaaac cntgn

```

```

<210> 41
<211> 616
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(616)
<223> n = A,T,C or G

```

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<400> 41
acgcgggggt cttcacgagg tggaaacaag atggaggatt cggcctcggc ctgctgtct      60
tctgcagccg ctactggaac ctccacctcg actccagcgg ccccgacagc acggaagcag      120
ctggataaag aacagggttag aaaggcagtg gacgctctct tgacgcattg caagtccagg      180
aaaaacaatt atgggttgct tttgaatgag aatgaaagtt tatttttaat ggtgggtatta      240
tggaaaattc caagtaaaga actgaggggtc agattgacct tgccatag tattcgatca      300
gattcagaag atatctgttt atttacgaag gatgaaccca attcaactcc tgaagagaca      360
gaacaagttt tatagaaagc ttttaacaaa gcatggaatt aaaaccgggt ctnaagatat      420
ctcctccaac tctaaanaaa gaataataat cctatgaacc aagctcgccct tttacagtt      480
tgattcttcn tactgatcca aaataagcgg ttttacctcc ttattgggag acattnttta      540
aaaaagaaag tccatntntg naaccttttt ccaaaatttn tcagananac atgctgnttg      600
gngacggctt aaaatt

```

```

<210> 42

```



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<211> 259
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(259)
<223> n = A,T,C or G

<400> 42
ngtacggtcg gtggcagtcg tattctgaga tctgtagatg cttagaatat cagtattttg      60
gatgttgctg cattttacaa tttatttgga gtcttccttn attttcctcc agatatatga      120
aaatatgcaa tacctgctta tatcatgtag aaaagcttag caattattaa tttttctnta      180
tttcatttta ttgacccaaa gtcggtgctt cacttgactc antgtgtttt aggtgttngt      240
ntttntacct ttccggtca                                     259

<210> 43
<211> 509
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(509)
<223> n = A,T,C or G

<400> 43
acgagtgtat ttttgatggg aaggccatgc taaatctata aaacagatgt ttccctctccc      60
aacagtggtc accagtagtt tcaacttttt cccccagta gcatcaacca aacttagcat      120
agtgatTTTT aactctttgc tcccacacgc actcatccca acttccccgc ttgccccact      180
cctggggggg aaataaccct gcctttaaaa taaatagcaa ccaagtgtc agttctatgg      240
aaagtatgaa tttttatttc aggccttcga tcccaatcga ttccaaaaaa caaagtctga      300
tttctctcct cagagcagct gaggcctcca tgttacgatg gtttcatgga gattgaagga      360
gcacatttca tcaggcttag cacaaagtcc ctgatgccca ccatgtccca gccttagnaa      420
aggaaagaaa cagaattcac caccatgggg ctgaacgaat gccacaccta atgtaaatga      480
ncagctaacc ttggccaaat tgtggtttt                                     509

<210> 44
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(544)
<223> n = A,T,C or G

<400> 44
ttttttaaaa gtgtcactna ntctttaann anatncatta ccattttttt tncaaaantaa      60
attacggttt taaaanggaan acacatggna atntananaa ncaccgnnga annttaanta      120
cctngggngc gancanactn anggcgaatt cgaaccaatg ggggcngnaa cnaggggatc      180
ccagctnggt accaaaattg gcgtnatgat cgcaatagcg gtacctgtgn naaanggtta      240
ttenntngta aaancagann tcntnnaagn nngacaaaaa aangtaaata ctgggggtgcc      300

```

taatgannga	tntaaancna	ttaattgggn	tgcccacctg	cnantttatc	gttcaaaaaac	360
ccgttaaacn	ngtgnaaaaa	tgaatngcca	accntngga	aaagccgnat	cntttgggng	420
cttttccttt	ttggctctna	cncttcctan	nngnnngttt	gggnncggnt	nagttcntaa	480
aggcgnaaaa	catttacaaa	aataggggaa	ancccgaaaa	acatttaccc	nagccacctt	540
ntcn						544

&lt;210&gt; 45

&lt;211&gt; 630

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(630)

&lt;223&gt; n = A,T,C or G

<400> 45						
ggtactctct	atcactgaca	aatgcaggct	ggattcttat	tatatacaga	gatggctcaa	60
aaatgggggt	tcagatcttt	gtgacgaaat	agaatactgt	ttcatatttg	aatcagaggg	120
cttcttggtc	tgagaaatag	gttcaaaatc	attggaacca	ggaacaagaa	tagcttattg	180
ttatctgtga	taacactggt	ttctaaacac	aaggattttc	ttttttatta	atatgcaaca	240
tagacattgc	cataacagaa	taataaacca	catgtggggg	tttaaaaatg	aaatttggct	300
aataggagca	attcagctat	ttttctatca	agaaattggg	tggggtggga	tagaaagaaa	360
aaccggggtc	aaccccaact	ctgcccccta	accagctata	tggcctggat	ggagcattca	420
acctttaata	agggtcaatt	tcntctgttn	aaaagacccc	aaacctggaa	atcacnttng	480
cctctccctg	aaaataanaa	ggctngattt	ttggaataan	aaacataatg	nangctnngc	540
ccaatggctc	gccccgtaat	ccaccctttg	gagggccangc	ggncggacac	ttgaggtagg	600
agttgaacca	cccgccacct	gggaaccenn				630

&lt;210&gt; 46

&lt;211&gt; 622

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(622)

&lt;223&gt; n = A,T,C or G

<400> 46						
tttttgactc	ccaaagtcat	tttatttaac	aaaggggtca	aggcagagga	aagtttccct	60
taatatcccc	acaactgctc	cacatgtctt	ctgtggaaac	acttcaccag	gaactagctc	120
aacactcttg	ctaacaattt	agtgtctata	caggaaggct	ggtgtctctg	ttacaggtgg	180
cccgttcctt	aaagccttta	gggttaatcg	cagctgcact	gagtggccaa	gcagaccctg	240
ttgggatgtg	aaagcagttt	gttaacaggg	cccctggcgg	ggcccagagg	ctgtcagact	300
cancaagtaa	cactgaatgt	ccaaaaatac	ggctgtgtta	aactaacaag	ccaatccttc	360
tgctcagatc	tctggataga	aatgattttt	cttttatcta	tgggggaatg	caatttcata	420
acaaccctt	acataaacgc	tcctgaaacc	ctttcagtag	acagcatttc	aattcaaaaa	480
ccaaaagtga	aactatcttt	gaaaacangg	acctggctgg	gaaaccatgc	acacctcggc	540
gaacactttt	ccccccacg	aacttggact	ttntgggaag	gtggcggggt	tttggcnaaa	600
acattcttga	agentaggaa	gg				622

&lt;210&gt; 47

<211> 253  
 <212> DNA  
 <213> Homo sapiens

<400> 47  
 ggtacttttg tttgaaaaca acacttagag cctccagata acttttaaga cttatttagc 60  
 tttgtgggtg gtattttcat gcaaataagt aagggtgggt tttatatatt gtagaagttt 120  
 tcggctctat tttaatgctc tttgtatggc agtatgtata tattgtgtta agttcctcaa 180  
 gaatctcctt aaaaactttg aagttaatac ttttgtgcaa ctgtgttttg aataaaagcca 240  
 tgacagtgtt aaa 253

<210> 48  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(607)  
 <223> n = A,T,C or G

<400> 48  
 acttacatat cctacatttg actacattat ttccaaacca agtattccat ccaaaggaac 60  
 atactgctat catagagacc aaggagggac tgtttaaagt tgccaagggtg aagcgagctg 120  
 agaggctttg tcctcggtgc agtaactctg aaatttctct taattcctgc tgtccaggca 180  
 gcagaatgcc atgggtttcc caagtaggta gctgctttag cagttaaagc ccaaagtctc 240  
 gttctgttga tcaagaggtc tctgaatttc tgaagtgggtg tttcgtttct ggtgactgag 300  
 ttaatccttt acaatnctc ttgtaaagtg tgctaataga aagaatccac ctttcaaagc 360  
 tgcagaacca naccgtgccc taaattgacc aaccgtanct gatgtgcctn angaagtctt 420  
 ttgccaaactg ccctgtgaan acccctnctt cccccagct ngtggcttgc acactgaaca 480  
 tttaaactgn gcaaagccgt gtagttataa nacagtaaata cccaaggctt gggttaantgc 540  
 tgggnnaaaa ctggttggat anacttaact taaaaccctt tacataaacn tnggaactcn 600  
 aagaaaa 607

<210> 49  
 <211> 421  
 <212> DNA  
 <213> Homo sapiens

<400> 49  
 ggtaccactg gatgaggggc cgggacatac tgactgcccc tttgaccca caagaatcta 60  
 tgatacagcc ttggctctct ggatcccttc tttgctcatg tctgcagggg aggctgctct 120  
 atctggttac tgctgtgtg ctgcactcac tctacgtgga gttgggccct gcaggaagga 180  
 cggacttcag gggcagctag aggaaatgac agagcttgaa tctcctaat gtaaaaggca 240  
 ggaaaatgag cagctactgg atcaaaaatca agaaatccgg gcatcacaga gaagtgggt 300  
 ttaggacagg tgctgttccc gagactcagt cctaaagggt ttttttcca ctaagcaagg 360  
 ggccctgacc tcgggatgag ataacaaatt gtaataaaag taacttctct tttctttcaa 420  
 a 421

<210> 50  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(624)  
 <223> n = A,T,C or G

<400> 50  
 ggtacttcag tattgcattc tattcctctt aatgttttta tgggatctcc agggaaagag 60  
 gaaaatgaaa accgtgatct aacagctgag tctaagaaaa tatatatggg aaaacaggaa 120  
 tctaaagact ctttcaaaca gttagcaaag ttgggtcacat ctgggtgctga aagtggaaat 180  
 ctaaatacct ctccatcatc taaccaaaaca agaaattctg agaaatttga aaagccagag 240  
 aatgaaattg aagcccagtt gatatgtgaa cccccaatca atggatcctc aactccaaat 300  
 ccaaagatag catcttctgt cactgctgga gttgccagtt cactctcaga aaaaatagcc 360  
 gacagcattg gaaataaccg gcaaaatgca ccattgactt ccattcaaat tcgttttattc 420  
 aaacatgac aagaaacggt ggatgacttt aaaaaanatg cntaaggac anttgtgatt 480  
 tgcagggtggg aagatnaaca gttcatatcc actgaatgaa atgcattctg tggaaganct 540  
 catgnatnaa gggttaatggc tgaaatgaaa actccaaaag aaacaaaaa ataccggccc 600  
 ctttgaaatt cagggannc tatg 624

<210> 51  
 <211> 632  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(632)  
 <223> n = A,T,C or G

<400> 51  
 ggtacgcggg ggaaacggaa gtgagcggcg gggtcgactg acggtaacgg ggcagagagg 60  
 ctgttcgcag agctgcggaa gatgaatgcc agaggacttg gatctgagct aaaggacagt 120  
 attccagtta ctgaactttc agcaagtggg ccttttgaaa gtcattgatct tcttcggaaa 180  
 gggtttttctt gtgtgaaaaa tgaacttttg cctagtcac ccttgaatt atcaagaaaa 240  
 aaattttccag ctcaaccnaa gataaaatga attttttccc cctgaagaaa cattcagggc 300  
 tatttttgctt cccttaaaat accagaatgg gattcaaggg cagtgccacc aggtcaaccg 360  
 ctttcatttc tttcaagcct caaatctttc acttgaatgt ttgaagggtg atggatgaag 420  
 acctattgga attgagggat atctttaatg atccgcccc aaccgaatcc ttggaaaagc 480  
 cacccttgat ggtggaatat aaccttggtt actgaatatg tgccctgtcat ggaaccgagg 540  
 ccgcattctg ttatagcatc tttgacctgc cggccgcccc aaaggcgaat ccacnctgc 600  
 ggccgttcta tggaccaact cggnccaact gn 632

<210> 52  
 <211> 623  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(623)  
 <223> n = A,T,C or G

<400> 52

actttttaatg	gtgggaattt	acagtagaag	catcctttgc	tgagttatac	attcctttat	60
caatctcttt	tgatacaaca	tttaaaacaa	gtagcttcaa	gaaaccactg	gtgttttgag	120
gatagtattt	ctaaatagca	ttcaggaaca	gagtattatt	gcacagatct	gaagatcaaa	180
aaaaagctca	aggaaataca	gatcgggaag	gctgatgagt	tatattttatt	gaaaacccaa	240
cttttaagga	agtgctaaga	tcagtcaccc	atgtgaataa	gaagccagga	aaggaaagat	300
ggggaaagcc	canatcacca	ggcttctatt	aaggaggaaa	gcaacagang	aaacagtga	360
agggaaacaga	aaggggtagc	caagtgttac	aaaaaanccg	actggataac	caaactncaa	420
aaagngtatg	ttggggagaa	ctgaaangga	aaacaaaata	cttgactaat	cntaagtaga	480
aaaaagcagn	tagagaaaac	caaataatttc	tggncctgtc	acatacaact	tcaaataccc	540
ttatanaatc	caaaaatgat	gtgtgtaagg	naaaatttat	tgcctntccga	aaaataantt	600
tntccaatnt	gaaacaaatc	aac				623

&lt;210&gt; 53

&lt;211&gt; 627

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(627)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 53

ggtacgcggg	gtcgcatgcg	ctgtgggctaa	tgccgtaggc	tctttcaggg	ctgagccatc	60
ctgcgtgtct	tgcgctcggt	ggaaatgccc	agccgagggg	cgcgaccaga	ggacagctct	120
gtgctgatcc	ccaccgacaa	ttcgacccca	cacaaggagg	atctaagcag	caagattaaa	180
gaacaaaaaa	ttgtggtgga	tgaactttct	aaccttaaga	agaataggaa	agtatatagg	240
caacaacaga	acagcaatat	attctttctt	gcagaccgaa	cagaaatgct	gtctgagagc	300
aagaatatat	tggatgaact	gaaaaaagaa	taccaagaaa	tagaaaactt	agacaagacc	360
aaaatcaaga	aatagtcaac	ctgattttcac	ataacaatgt	gtggcatttg	ttgttctgta	420
aactttttctg	ctgagcattt	cagtcaagat	ttaaaagagg	acttactata	taatcttaaa	480
cagcgggggac	ccaatagtag	taaacaattg	gtaaagtctg	atgttaacta	ccagtgntta	540
ttttctgntc	acgtntctaca	cttgangggg	gtttgactac	ccancctgtg	gaagaagaaa	600
gaagcaatgn	ggttctatgg	atggaga				627

&lt;210&gt; 54

&lt;211&gt; 565

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(565)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 54

ttttccttga	gtgctccctt	ttatgtcatt	ttatttttctt	ttatgcagac	cagtgggggg	60
aaaatcccat	agattcttct	ggaaactgtc	aagatgctgg	gaagatgaat	gcaaaactta	120
catagattgg	gatgtccaca	gtttggattt	tcaaggtagt	gcttttgcag	gatgacgtga	180
tcaacccaaa	cttctgcttg	atctgggttg	tcctgaactc	ctgccacttg	ccgccaacca	240
gggcctctgc	tctgatctca	tacttcacca	ggcgtgccgn	tcgcaggctg	acgtggttgt	300
gctcgtagac	cgcagaggga	gattccagg	ctgtgtgctt	tattctctgc	atgtaaaaac	360
tataagaggt	agtatcatgt	ttgagtcctt	ttatcttaaa	gaagaatcca	tatagagcaa	420

tcgttttcga	ataagttgna	ttctctgngt	ctggcactgt	gtccagtgt	ctcanaggat	480
gcangggaga	anacccaaaa	gtntctgagc	agtctcacat	gggaaataaa	atgtgtcccc	540
ggtaccttgg	ccngnaacac	nctaa				565

<210> 55  
 <211> 451  
 <212> DNA  
 <213> Homo sapiens

<400> 55						
acagagatga	caagagaaa	gcacaaatga	ccggagtcag	ggattgtggt	gagggctcca	60
catgaagaca	gcatgttga	ggagaccaag	ttgggaaggg	tgacatgtca	tacatcaaaa	120
gttgccccaa	gatagcaggt	tataatgggc	tagagagaaa	ttagagggaa	catctcttcc	180
ttcacttgaa	caacacccaa	aatagaagac	cagagaatag	aaggatgggt	acaaatccca	240
aaaaggaaat	ggaggaggag	ttcgtggaag	ggcagaaaca	ctttaatcct	agagggaggg	300
tgaggcactg	ttgaaaagag	aagcaaaactt	tggcaggggt	ggccattctg	ccttgctgag	360
tcatgggctg	agatacggaa	gtcactttca	atcattttct	acttctccca	gggcactcag	420
acaaaatcag	tgcaaggtat	atggaagtac	c			451

<210> 56  
 <211> 623  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (623)  
 <223> n = A,T,C or G

<400> 56						
ggtacgcggg	gcttccgaga	cgcactgggg	gccggatgta	gaatcctgct	tatctgtgaa	60
atgcagttaa	cacatcagct	ggacctatct	cccgaatgca	gggtaaccct	tctgttattt	120
aaagatgtaa	aaaatgcggg	agacttgaga	agaaaggcca	tggaaggcac	catcgatgga	180
tcactgataa	atcctacagt	gtttcactct	tggtgccag	gctggagtgc	aatggcgcca	240
tcttggtctca	cggcaacctc	tgccctcccg	gttcaagcaa	ttgtcctgcc	tcagcctcct	300
gagttgctgg	gattacagat	tgttgatcca	tttcagatac	ttgtggcagc	aaacaaagca	360
gttcacctct	acaaactggg	aaaaatgaag	acaagaactc	tatctactga	aattattttc	420
aacctttccc	caaataacaa	tatttcagag	ctttgaaaaa	atttggtatc	tcaacaaatg	480
acacttcaat	tctaantgnt	tacattgaan	aaggagaaaa	acnataaatc	angaatacct	540
aatatcttca	gtngaanggc	atcaagggtc	tcttgaaaac	ttnccggaat	aatgaatntn	600
ccnaagtcca	aaanattttt	aac				623

<210> 57  
 <211> 622  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (622)  
 <223> n = A,T,C or G

<400> 57

```

cgagggtacttt ttttttttttg tttttttttt ttttggtttct gtccctttaat tttttaacag      60
aatatacaga gccacacaat acgattttcaa tttcaaatta tgggagatca tattcaaata      120
tgcttaggtt tgacaagttg ctgttacaat actgagaact ttcatagaaa cggatatttaa      180
caatttttaa gataatcaaa tatctttttg ctacgtgggc caacgcatta atactaactt      240
gtttaaaaaat gcagtctttt agacttcaaa ttattataaa acaatatcaa gatcatatag      300
atatacttcc tgattactca aaactcgttc cattctgatg gaggctgaag gtaaagtgtta      360
ttatacatta gaacatttca tgaaccact tctcctttgc acttacctgt aaaagtcaaa      420
aattaaacca caatttccta agacataact atttctagaa tacattggtg taatcataaa      480
agactacnag taaattatca tttttatcta acacttttta ccacacacat ctttctctaaa      540
aggaccnaaa aaaattggga atttggattc cttacataac aggactcata cttctgattt      600
aataaattnc actcttttca ag                                     622

```

<210> 58  
 <211> 471  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(471)  
 <223> n = A,T,C or G

```

<400> 58
ggtacttttt ttttgtttgt tttctagact taataaaagc ttaggattaa ttagaagaag      60
caatctagtt aaatttccca tttgtatttt attttcttga atactttttt catagttatt      120
tgtttaaaaa gatttaaaaa tcattgcact ttggtcagaa aaataataaa tatatcttat      180
aaatgtttga ttcccttctt tgctattttt attcagtata tttttgttg gcatcatgtt      240
gaagcaccgg aaagataaat gattttttaa aggctataga gtccaaagga atattctttt      300
acaccaattc ttctttttaa aatctctgag gaatttgttt tgccttact tttttttctt      360
ctgtcacaat gctaagtggg atccgagggt cttaatatga gatttaaaat cttaaaatgn      420
ttcttatttt cagcacttac atcatttggg acctgccngg cggccgntcg a               471

```

<210> 59  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(618)  
 <223> n = A,T,C or G

```

<400> 59
ggtacatata caatcactca actggaacaa tcaaaaccat ctatgagtgt gggtattaaa      60
aaataaaatt acgttcatac aatggtagaa aatgaaatgt ttttattaat ttgattatta      120
atacaaaacc acacatatat gaattatata acctagtgtt atatatttta aaatctttat      180
gcttgcaact gaaatgtctc tactccaagg gaagtttctg atttttaatt ttcttatttt      240
aaggaatcta ttatattcac aatgattaaa atgccttaca cataggcaaa aagcagaccc      300
aatcccagca aacagaaaaa ccataagtct atcatatcac catatgtttc accatatagt      360
tttgaaaaat aatcctattt gcagtttggg atgtcttcat atttatactt attatcaaag      420
tgattgcata ttgaggcaca gagcttaaag aggaaatata tattacttat aggggaacca      480
gacactgaaa caaggaatat caatcaatgg cttcaaacna aaaaaaaann nnnnnnnnnn      540
nnnnnnnggaa aaggaaaagt cctgncccg cggncgttca aagggcnaat tcaaccactg      600

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ggggccgtac ttatggac

618

<210> 60  
 <211> 606  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 60						
actttttaaa	ccctcccaac	cagccctttc	tcaatattca	tcaaattctaa	aacatttagg	60
gggcaaaatt	ctaactggtt	catggtatct	tgcaaattag	aaaagcttta	ttctgaagga	120
ttataaacta	gttttctcca	ttttaactag	cactattttg	tggaatttag	aaacctcttt	180
tattttctctt	cccaaaagta	atacttatta	taaggctgta	gtatcagggt	aaggatacag	240
ataaataaag	ttcacttata	tcttcttaca	aatgtctggg	ttttaatatg	gttaatcact	300
tatatacaaa	tattacaact	tttttagtgca	agtttttgga	agaaaacttt	ttgataaaac	360
actgtgattg	atgtgacttt	atttttaatt	taaacgatga	gggtggccaga	agaaagatgg	420
gtctaaaatt	tctcccatga	aagatgtaaa	actatggctt	ttttaaaatc	aaaatttcat	480
ctttaaaata	atgggttgaa	atctggatng	gatctgaaca	gaataatcac	atntaggtac	540
tatataaatc	tcaactggag	tntaactgaa	ggaaataccn	ngattttaag	aaatatnttc	600
aaaaan						606

<210> 61  
 <211> 620  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(620)  
 <223> n = A,T,C or G

<400> 61						
ggtacattct	ggtatgaaaa	catctcaaaa	tgtaacaaca	caagagtttg	ggtcaagacg	60
acccacccag	gaggctgtaa	aaactggttt	gaactagaac	tgtggaatgg	aactagttta	120
aaatatgaag	cagctctaaa	caccaagctt	agagacattt	gccctattag	aaaacaaaaa	180
tcattaaagc	tacaaaataa	caagtgcata	catgctgaac	ctgtttccag	ggagtgcacat	240
tcccttctgc	caacagggtc	caaactcaca	cccacaaggt	gtaactctct	ttcctgttcc	300
actagatttc	ctttctctca	tctcaaaggt	cctcagaaat	gacaatggaa	aacgtatgaa	360
ttgttgaaat	ttaccctgtg	gaccaattcc	tgaagagata	acagccacaa	ctctgagatg	420
attaagacat	gcagtgttta	cttgatgact	ttctgnattt	ctagaaacct	tcaaagcatt	480
aaactgncta	tttcaaaatc	taaacttnct	agcactttta	ttatttggag	taagcnnacc	540
gaagacaatt	tactggccca	caggaataac	cacgcttact	tgtcaccata	agtttacggn	600
atggacattc	actgaaaaac					620

<210> 62  
 <211> 614  
 <212> DNA  
 <213> Homo sapiens



<220>  
 <221> misc\_feature  
 <222> (1)...(614)  
 <223> n = A,T,C or G

<400> 62  
 gccgaggtac ataaatctgt gatcccattt cttattgcac cattcaggaa cactttatat 60  
 aaatgagtgg ctttttattt catattatta gtagtatcat gggtccatta caggcctatt 120  
 aacatcatac attgtcatta gtctttgaag aaaaaatatg taaatatata tgtgtaacat 180  
 gagaatttct ctctaaagca gggcttaaaa ttttttgga aagtttgaca aagcatacca 240  
 catgaattca gatttacctc aatgctaaga attatgttta gttaggaaaa aggaaagtca 300  
 ttttgacctc aggtagaaaa atagattgct ttgagtttta tgtagcttta gactttaaaa 360  
 agttagaatt tattctgtaa ctaaaaatta tttgaaaaaa ttatgcctct gggttaatta 420  
 ttggtgatta cacactcttt ctcttaccct tnggtattga actatgtcca taatcaagtt 480  
 gatgtggatc ctgaaaaatg gtatgaacat ctgatgggat tggcacatta ttttaaaant 540  
 agcatctgac acttcaaaac tgtcantgng atggggtcac cataccacgg ntgaccntac 600  
 attaaatttt nacn 614

<210> 63  
 <211> 616  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(616)  
 <223> n = A,T,C or G

<400> 63  
 ggtacatata agagtaatta gttttattct ctctttttta taaaatcggg ttccagatga 60  
 gatgtttatc ttagactatt ttagggaaaa attttacatg tttgagatgg tggagtaaaa 120  
 agactgttaa acatttcttt taaaaaatta tttttacatt acaacaatat atttatgatg 180  
 tgttcagatc aaaaatttaa cttctgtgtc ccagatctac tttcaaagtg agattttcac 240  
 ttgtcagctt aaatttctga ctagaactaa catttgtgta tttttgtgct tagtcggaat 300  
 acaaatttca cagtggattt ttgaagtttg tccttaaatt ggataaaatc aagtgattaa 360  
 agttactaaa gagataaaaa tggtaatttc cattttttaa agtaatttgg ttgtgtttat 420  
 agttatttgt acttcgagtc tcccttcacc atttccgacg gcactctacng ctcaacattt 480  
 tttggtaccc cangetttca cggacttcac gtcattattg gctcaacttt cctcactatc 540  
 tacttcatcc gccactaata tttcctttac atccaacatc ctttgacttt naagccgccg 600  
 ctgatnctgc attttt 616

<210> 64  
 <211> 612  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(612)  
 <223> n = A,T,C or G

<400> 64  
 ggtacagata tcattncttg tgtatgccat gacttgaaaa agtttgggaa gctctttanc 60

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aatatcagct aanaggatat gaaatcacag gtgatagcag ttgtcattca gtaatttcct 120
acaagcagca ccccaaagga aatatagctc taatctttac tatccacttc taaattttaat 180
gtgaatttca tacatgttat tagttgtttc ctttataatt ttataaaaaat tattcatcgg 240
gagtttaact tccacttcca tgctatcgga tgtgttgggc tccatgcaag aacttggaag 300
aaaaacaggc aggaatgcat ttgcataatg acccagatca tcattttctg caactgagaa 360
ttatatattca tcattgcttc tagaagtctg caattcttta cttttctttg gtgcattatt 420
atctangtgc ccatcactgg ataagtgtga gtgactagag aagtcatnta tctactggaag 480
gncctgccc ngcgccgctt caaaaggnc antccagcan nctggcggcc gttctaattg 540
gntccaactt ngggnccaan cttggngnan tcatggcnta acnngttccn ggggggaaat 600
gntntccctc ac 612

```

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<210> 65
<211> 599
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(599)
<223> n = A,T,C or G

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```

<400> 65
acaagctaca aaatagcatc tctttcatgg tatgtttgag tgtgtaattt tagtttcttt 60
tctggttgta tttgtggtag tcagatgtgt tggattgatt ccaactggac agagtaagga 120
attccagcat cctcttcctg cttgctcgtg ttaccccaca gatcaaacc tcaattctag 180
ttggggatgc tgtctagccc cacaccatga ctgaagcctt aagcactgtt gcgcctccat 240
gtgctttggg tcagcaaccc cagtgggtatt ctaccagagc attgtgggaa ggcagatgta 300
tagtcaggtc ccaacagcaa attgttgggt gtgagagttc taaagtatag gggggaaggg 360
aaagagaang atatgaactc ctctgacctt aaccacattc atttaacttt tatgcctact 420
taacaagaga acctggagaa aactatcgna ttcaagagat taatcaaaat cagggtttan 480
ccagccatga ccgaaanenc cttccttaac ctcatcttgn anggctgnaa naattcann 540
ctaggatggt taanccagaa cccngatga ttaantgtcc aaccttnatt tncatantn 599

```

```

<210> 66
<211> 611
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(611)
<223> n = A,T,C or G

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```

<400> 66
ncatgacctt tagtgaaga ttatttggtc atcaaatacc catatccaag tttccatggg 60
gcctgggaat ttcttttcac ttggatagaa agtatatatt aggaaagtcc agttaataag 120
tatttttatt taaaaaaaaa aaaaaaggaa aaaagaatca gcagaagtca agttgtctta 180
agtcttaagg ctttctggat ttcttcttg gaggaggtca ggatcttccc aaggcctggg 240
tctctgaata ttcttccagt catcaaactt ggagtctttg attttctcat attccgactc 300
taaagatatt ttattctctt tcagtttttt ttcaagctca ggatccattt tactcttcac 360
agcatcatat cggatttgag aaaactcacg aagacaaaaa gaaccttcaa caatcagcaa 420
caacatgggg actccatacc cagagtcttg gtcttgcgaa aagcacgcnt naaccgctgg 480
tgccaacatg agtgaactct ttcacgggtt naaactccaa cnggcctacg caaactccca 540

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atttacaggt tangctttta ccaaacaagt nccnnggcgg gacnccctag gggaattcgc 600  
cactgggggg t 611

<210> 67  
<211> 639  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(639)  
<223> n = A,T,C or G

<400> 67  
nagaattcgn gcttncnagc ggctcgnccgg gcaggtacac tttacttaaa aactattaac 60  
agtttttcat gttgcactgg tggtaatttt gaacttgga ttactgggtg ggaattccag 120  
gaaccacaga gtattgattt ttgctgccaa aatgctcttg aagcagatgt ccctgtgctc 180  
ccctggctgc ttctggctga aggggggagg tgtagactga agcttgggca ctcagtgtg 240  
tccccccca gtccccatcc tagtggggcc agtctcatta ggcagccata gataagcctg 300  
gaacttggct gcattagtga cttgatcctg gtatgaaatg catactgggt ataaagntgc 360  
tcaagnattt tatttccttg gccacaactt ccatagatgc caatgggttg atagcctcag 420  
tttctnaacg atgtcttttg gttacagtgc tcacttantg ngagtcaaga aatgcttgag 480  
ttaccagaaa cttcttantc aggttgagta acnttttaacn ttcatgngta nctnnggcgc 540  
gaacaccctt anggggaatt ccacacactt ggnggccgta ctaanggatc caacttgggn 600  
ccaacttggg ggaaaaangg cnaantggtt ccttngaa 639

<210> 68  
<211> 611  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(611)  
<223> n = A,T,C or G

<400> 68  
tcgaccggcc gccggccng gnccttcccc atcactnnac tggnacnate aaaacntct 60  
atgantgngg gtattaaaaa ataaaattac gttcatacna tggtagaaaa tgaaatgntt 120  
ttattaattt gattattaat acaaaaccac acatatatga attatataac ctagtgnat 180  
atatttaaaa atctttatgc ttgcaactga aatgtctcta ctccaaggga agtttctgat 240  
ttttaatttt cttattttta ggaatctatt atattcacaa tgattaaaaat gccttacaca 300  
taggcnaaaa gcagacccaa tcccagcaaa cagaaaaacc ntaagtctat catatcacca 360  
tatgtttcac cntatagttt tgaaaaataa tcctatttgc agtttggnat gncttcatat 420  
ttatacttat tatccaagt atgcntattg angnccnaag ctttaagang gaattttntt 480  
cctatnnggg acccnaccct tgacccgaat tcatcaangg nttaacceca aaaaaaann 540  
aaaaaaaaat ggnaangggg ctcccttnaa ancccccca acctntttnt ttaacnagnc 600  
tnagcctttc a 611

<210> 69  
<211> 606  
<212> DNA  
<213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 69  
 accaaagcat taccgcgatg gtagagaaca cactcgatta aaaatgttaa gctatctgaa 60  
 aaataaaatg tgcaagtctt caggatggca caaaacaaag gtcaatgctt cttggggcac 120  
 atttcttaga gggcttgctg agtgtgtaaa tataatcgac ttttgttgt gttacatgac 180  
 ttctgtgact tcattgaaaa tctgcacaat tcagtttcag ctctggatta cttcagttga 240  
 cctttgtgaa ggtttttate tgtgtagaat ggggtgttga cttgttttaa cctattaaat 300  
 ttttattttt tttcactctg tattaaaagt aaaacttact aaaagaaaag aagtttgtgt 360  
 tcacattaaa tgggtttggg ttggcttctt ttaatcaggc tttctgaaca ttgagatata 420  
 ctgaacttag agctcttcaa tcctaagaat ttcataaaaa gncntnact ttgaacccaa 480  
 accanaatac ctccggccga caccctaagg cgaattccag ccactggcng gccgtactaa 540  
 nggatccanc ttggtnccaa cttggggnaa catggcnaac tggttccggg gaaatggatc 600  
 ccncn 606

<210> 70  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 70  
 ncgtggncgc ggccgaggtt cttttttttt tttttttttt ttttttttnn aaaangggta 60  
 accttaaagg tttantggcc ccccaaangn aacctggggg taatggcttc nnatttttaa 120  
 tttttggaaa ttaaaaaaat tacnagtttt aaatagccna tggttgnta tgttttcana 180  
 aaacatgatt agactaattc attaatgggg gcttcaagct tttccttatt ggctccanaa 240  
 aattcaccen ccttttgncc cttcttaaaa aactggaatg ttggcatgca tttgacttca 300  
 cactctgaag caacatcctg acagtcaccc ncatntactt caaggaatat ccgttggaat 360  
 acttttcana aaggggaatga aagaaaggct tgatcatttt gcaagggccc caccacgtgg 420  
 gcgganaaat cacttctaca gggtattacc tgganngtca aagntttctg naaaacant 480  
 tgctctcaac tgggttacca tttggtgctg gagctnaca cgggtttaag gcccttggn 540  
 anggtccaag ncccaanaaa ctttcccggt cttccggng gccttnaagg gaatccnccc 600  
 tgggggcgtt t 611

<210> 71  
 <211> 588  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(588)  
 <223> n = A,T,C or G

<400> 71

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nctgggaacn ccgaagggtg aaggccnttt cataacattt cttgtggatc aaaccaccgg      60
gacacctttt ttncatcaa caggactagc gtcttgtcag tcttgggtgac agtgacattg      120
aangtggggg ccacccgggt ctcttgggtac tttcccaaga ggtcctcatc ctgagacggg      180
ctctacccat gtttaaccca aagagtgcag gccaggttcc ttatccttct gatgaaggat      240
gagagaactc atttagaagt cagagcaaac tagggtctca gtattgagaa acgcacctgc      300
canggaatca cagagacatc ggggtgcccc cgatggcctc atgaaccatg cctngacggg      360
attcaggaac cctgcaaacg tgctttttga ctcatgggnc agtgtgaatt ttacacaagg      420
naaacctggg cnaaggcatt ngggaattgc tccaacnnat acttcctntt aggaacccaa      480
ggaancaggg tcncgaattt tgaaaactgg gtntgaagtt ctttcttctt ttgggnacaa      540
ggccttaaca aanancttgn ggnttccaaa tggncctggc cccacacc      588

```

<210> 72  
 <211> 591  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(591)  
 <223> n = A,T,C or G

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<400> 72
ggtacaaact tagaagaaaa ttggaagata gaaacaagat agaaaatgaa aatattgtca      60
agagtttcag atagaaaatg aaaaacaagc taagacaagt attggagaag tatagaagat      120
agaaaaatat aaagccaaaa attggataaa atagcactga aaaaatgagg aaattattgg      180
taaccaattt attttaaaag cccatcaatt taattttctgg tgggtgcagaa gttagaagg      240
aaagcttgag aagatgaggg tgtttacgta gaccagaacc aatttagaag aatacttgaa      300
gctagaaggg gaagtgggtt aaaaatcaca tcaaaaagct actaaaagga ctggtgtaat      360
ttaaaaaaaa ctaaggcaga aggcttttgg aagagttaga agaatttggg aggccttaaa      420
tatagtagct tagtttgaaa aatgtgaagg actttcgtaa cggaagtaat tcaagatcaa      480
gagtaattac ccacttaatg gttttgcctt ngacttttgg gttaagaata tttttaaatc      540
ctgnngctnc ctaattggc cgnttgncca ngggttcenn aaatggggttc n      591

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<210> 73  
 <211> 581  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(581)  
 <223> n = A,T,C or G

```

<400> 73
acgcgggtat ctgtaatttt tataattcat caattctgga atgctatata taatatttaa      60
aagacttttt aaatgtgttt aatttcacat tcgtaaaaaag ggatcatctc agagagaaca      120
gcagtattct gcgtattttt aaaaatgctc tagagtaaca tttgaagtaa ttcactgtag      180
tgtatgccag tcctagaaat aattttttta atttctgggt tctgtttcta atacactaac      240
caagttttca aaatatattt acaaagatgc atctttaccc attattttta aatgattaag      300
gaggatagtt gcttcaggta acaagctaatt ttttcaaata ttaggccctt acagaactat      360
ttagtcaaaa agtaagatat tcctttaaaa tatataaccc aaagctttca gttaaaccat      420
gatatatcac aaatactatt aaaatggtaa agagaaaatg caattgcant taatgatgcc      480
caaatngtaa aatatngaga ttcaaaaagct gggnttttat ttagngggga tnccaatggn      540

```

aatgatactg gcctggnttt acctttacct tttaaaaaan a

581

<210> 74  
 <211> 599  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature  
 <222> (1)...(599)  
 <223> n = A,T,C or G

<400> 74  
 cgaggtaactt tttccgcaca tgccttgtgc ctatctgagt attgatgcca tggatgtggc 60  
 cggagaacag cagctggatg tggaacacaa cctgttcaag caacgactag ataaagatgg 120  
 catccccgtg agctcagagg ctgagcggca tgagcttggg aaagtcgagg tgacggtgtt 180  
 tgacctgac tccctggacc ctgatcgctg tgagagctgc tatggtgctg aggcagaaga 240  
 tatcaagtgc tgtaacacct attgagcagt gcgggaggca tatcgcccggt anaagctggg 300  
 ccttcaagaa cccagatact ctgccangtg tatggctttc ttggaaagtc ccagaagatg 360  
 caggaaccag aagaatgaag ctgcccangtg tatggctttc ttggaaagtc aaataaggtg 420  
 gcccgaaact ttcacttttg ccttggggaa ganccttcca gcantcccat gtcacntcat 480  
 tgacttggca aacttttgnc ttgacaaccn tnaccatgac ccactacatc ancacctgtc 540  
 atttngggga ggactttcna gccttgggaa acccctngac cccccaatgg taattggcc 599

<210> 75  
 <211> 594  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature  
 <222> (1)...(594)  
 <223> n = A,T,C or G

<400> 75  
 acatcaaatt ataaatgcaa aacagggttca gatttcatct tttgtgattt cttttaaata 60  
 ctattcattt ttattttaa atgcacagtatt tccccatat tttagtcctt ccattcctag 120  
 agacaaacca gttatttggg ggtgggaagt agctgaagca aagaaggaaa agtaatacct 180  
 ttaacctcac tagcttcaag agtagacatt ctactagct caattttaa attgatttt 240  
 aaataggaag aaaagaggat atattttaaga tacatagaaa ttatgatgtg aagtattcat 300  
 gagaatctgt agattccatc aaaataagta ggaactcatc taaaattgtt ggattttaaag 360  
 aggcactttt ggttatgatt caaatatggg gaatttgaga aatattcatt ttgnccactg 420  
 gatggtcact attttactaa aanggnagct ttttatgggg ggactgngac tgaggtctta 480  
 aagactgaaa gaagttgggg ggttcatttt cngtaccacc ttcnnggacc atttgacct 540  
 ttggccggga acaccctaa ggngnaattn cngnccctgg gggccgtcta atgg 594

<210> 76  
 <211> 585  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature

&lt;222&gt; (1)...(585)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 76

acgcggggg	cggagtagca	agtggccatg	gggagcctca	gcggtctgcg	cctggtagca	60
ggaagctgtt	ttagggttatg	tgaaagagat	gtttcctcat	ctctaaggct	taccagaagc	120
tctgatttga	agagaataaa	tggattttgc	acaaaaccac	aggaaagtcc	cggagctcca	180
tcccgcactt	acaacagagt	gcctttacac	aaacctacgg	attggcagaa	aaagatcctc	240
atatggtcag	gtcgcttcaa	aaaggaagat	gaaatcccag	agactgtctc	gttggagatg	300
cttgatgctg	caaagaacaa	gatgcgagtg	aagatcagct	atctaataat	tgccctgacg	360
gtggtaggat	gcattcttcat	ggttatttgg	ggcaagaagg	ctgcccaga	cacgagactt	420
ttaccaagct	tgaacttana	aaagaaagct	cgtcttgaaa	gangaagcnc	tntgaaggcc	480
aaaacagagt	acanaagttt	ccnngttggc	ttggattttg	aaaattcnng	aattntntat	540
aacgggcttn	tttaaaaagg	atnggnttan	gnaccttnt	taaat		585

&lt;210&gt; 77

&lt;211&gt; 591

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(591)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 77

ggtacgcggg	agtcataattt	atgaaaaaag	gtttgtgttt	tactcttgct	agtgagaaag	60
tgggacaaaa	tatacttttg	aaataaaatg	ctatatggca	cctaattatt	ttttctttta	120
aaatgcctta	agttgcagtc	tcattttgat	aatcatttgc	ttccagtgtt	taaaaattaa	180
aaaaagaatg	gggagaagg	tatgagaaga	gcattattaa	gtttccaaat	ttaatttgaa	240
ttccaaattc	acctagcaat	aaaatcta	ttttaaaaag	tataataata	taaaatgtat	300
aaatgatgga	tagatttttg	tattgatttg	caaatgcag	attatatttg	ataggctata	360
gtatgtagat	attcctttta	ggaatattac	agctgtaaat	tatatgagac	ttgccagtca	420
aatgctattt	ggtttaaaaa	aattattgca	atctcaagtt	aatggaatat	ttttaaatcc	480
cacattcaga	gttaaaacct	ngttttcaat	gggtttttan	tgtggcactt	gnttatagat	540
taatttttaa	taacctgttn	ggaancnggg	ccttttaact	ggtccttggg	g	591

&lt;210&gt; 78

&lt;211&gt; 252

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 78

actgagaagt	attttcagtg	attcgaccca	gaccagattt	caacacatgg	ttcccataca	60
ggaaggactg	ctctgcacca	ggctttatcc	aaactttata	cttggcataa	ggtgcaagg	120
aatccagagc	tgtgacgtgc	aaccgaaact	tgtgggtttt	agtgaatttt	ccaaagcagg	180
tccccagcga	caccagcttg	tccccgaaa	tattggcggc	cagcttcata	atctttctac	240
tcacatagta	cc					252

&lt;210&gt; 79

&lt;211&gt; 571

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(571)  
 <223> n = A,T,C or G

<400> 79  
 gctcgggcaa gcactttaac cttttaagcc caaccagatg agttgcctgc agttttggag 60  
 gccttcagag catttcacta gacctctgtc tgtgtcggtc cagtgtcttt agccaagctt 120  
 tgattaaaga tgacttcctt gtttgctcaa gaaattcgcc tttctaaaag acatgaagaa 180  
 atagtatcac aaagattaat gttacttcaa caaatggaga ataaattggg tgatcaacac 240  
 acagaaaagg catctcaact ccaaactgtt gagactgctt ttaaaaggaa ccttagtctt 300  
 ttaaaggata tagaagcagc agaaaagtca ctacagacca ggattcaccc acttccacgg 360  
 cctgaggtgg tttctcttga actcgttact gggcatcagt agaagaatat attcccaaatt 420  
 ngggacaagt tcttttagga agacccttta tccttttgct ggtgaaaatc aaaatgaagc 480  
 nnaaaatccc ttcaaatga ggccaacgan taactttttt aaatggcttt tcaaaaagcc 540  
 ntgttaatta ancttnantg taaaggnntt t 571

<210> 80  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 80  
 acctcttctt gttcgaatgg gttatccagt aaaaaagggc gtgcccattg caaaggaggg 60  
 aaatctagaa cttttaaaga ttcccaattt tctgcatttg actcctgtag caattaaaaa 120  
 gcactgtgaa gcccttaaag atttttgcac tgagtggcca gccgcactgg acagtgcaga 180  
 gaaatgtgag aagcattttc caattgaaat tgacagcact gattatgttt catcaggacc 240  
 atctgttcgg aaccccagag cacgagtagt agtctcaaga gtaaagcttt ccagtttgaa 300  
 tttagatgat cagcgaaga agaaattaat taaacttgta ggagagcgat actgcaagac 360  
 cacagatgtg cttaccatca aaacagatag gtgcccttta aggaggcaga attaccatta 420  
 tgccagtgtg tctactaaca gtgttatatc atgagtcttg gaatactgaa gaatgggaaa 480  
 aaagttagac tgaagccgac ttggagaatn tatatgggaa aatactatca gaaagaaata 540  
 tctggnaacc cttttccgat gaaagtgtcg anaaaatntg gaattaataa gaagn 595

<210> 81  
 <211> 601  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(601)  
 <223> n = A,T,C or G

<400> 81  
 acgcggggga aaacaagatg gaggattcgg cctcggcctc gctgtcttct gcagccgcta 60  
 ctggaacctc cacctcgact ccagcggccc cgacagcacg gaagcagctg gataaagaac 120



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aggttagaaa ggcagtggac gctctcttga cgcattgcaa gtccaggaaa aacaattatg 180
ggttgctttt gaatgagaat gaaagtttat ttttaattgg ggtattatgg aaaattccaa 240
gtaaagaact gagggtcaga ttgaccttgc ctcatagtat tcgatcagat tcagaagata 300
tctgtttatt tacgaaggat gaacccaatt caactcctga aaagacagaa cagttttata 360
gaaagctttt aaacaagcat ggaattaaaa ccgtttctca gattatctnc cttcaaactc 420
taaagaanga atataaatcc tatgaagccc aacttccgnc ttctgagcag ttttgaattc 480
tttcttactg atgccagaat tangcngntc ttacccttac tcattgggag acattttctat 540
caaagaaaga aagttcagta tctgtaaacc ntttgtccaa gaatttttca ggagagatca 600
a

```

```

<210> 82
<211> 606
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(606)
<223> n = A,T,C or G

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<400> 82
cgaggtagctt tgaatatgga gtagtttaca gctatttttt tttcttactg gtaatcttaa 60
ctaatatgat tcccttatta gagagcctct cactccccc cccccaataa tgtctactat 120
tcatgacagt aaccaattat tctggacaaa ttgtctcttt ttaatttgag ctatctgcca 180
tggtactttct aaaatggaaa cacagcctga gtgtatctta gggagagttt gattgaaaaa 240
atccaaatca ctatccatat agatcatgga tataaagaga tacctgattt ttattaaaaa 300
gatacttttt caaatttaag agttaatctt ggaaatttgg aacaagttaa ggggcaagta 360
aaccttttga tgaaatataa aaggactcat tgcatagaat gactatcaaa ttctgngatg 420
tgnggcttct taaaaatatt ctgagggtct tgggggcctg ccnatggta cctgcccggc 480
ggcgtcaaaa agggcgaatt ccncacactg ggggcccgtac taggggggtcc caacttggac 540
ccaacctggn gnaaataang gcataantgg tccnggggga aatggtnncc gttccattnc 600
cccann
606

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<210> 83
<211> 613
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(613)
<223> n = A,T,C or G

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<400> 83
gcgtgggtcgg gccgaggtac acgttcgtca tggcggctgg ccctggacct gggtaggggg 60
tccgggttca gtggtaatat cggcggagat gggggagcct ccgcttggct tctttcacac 120
gggttgcttc ggaggaatcc gccgtgcaaa tctgtccgcc cccttggcca ctgatcccc 180
gaagagcttc tgtcgccgct cttaggaatac agacattgaa gtttgggaca agatatttat 240
ctaacttctg tgtcaaaaatt agcgacctgc tatggcaatg aagaaagaaa ctgaatttgt 300
cattttcacc tgaagaaaaa tgatagacaa aaatcaaacc tgtggtgtag gacaggattc 360
tgtgccctat atgatttgct gattcacata ctcgagaat ggtttggtgt ggaacantt 420
gaggactatt tgaattttgc aaactatctc ttgnggggtt tacaccacta atacttttaa 480
tacttcctta ctttactatc tttcttctct accttactaa taatttctta cacattatta 540

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agaagaaaga tgttttgaaa gaagcctact ntcataatta tnggatggtn caagggaaaac 600  
 anggcactnt ntg 613

<210> 84  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(605)  
 <223> n = A,T,C or G

<400> 84  
 ggtactatct gctgctggca aatgggggttg ctctgggtga cagggatctg ctgacccaat 60  
 gctatggttt gttccagtca atgagttgag aaggctaaag ccttggttcc tatcattctt 120  
 catcactaca ttggaccaca cattggcatt cagggcttgg acaattcgct ttactcctgt 180  
 agattctggg aagtcatcat cctcctcagg caactcctct ggactaagtt ctaccaattc 240  
 aaagccatgt ttgaggcacc attcttgagc tttttgtcgg tttataccat cttcagacac 300  
 tctatcgag accaagatca tcacctcagg taacctgct tttgccagtg gaagccatga 360  
 ggagacacta tcaaggcccg atttttgtgt gctgtcaaaag taaaccacaa atgcttggac 420  
 agattctgca atctctgcag taaccagaaa tttgttgggc accccacata gattgagtct 480  
 gctgaaaagt atttattatc aatgggcccn ggataaaact acacattatt tgggaagtact 540  
 ttncnaataa gaacttnttg tccaaggtat ttttgaccn aanggnctct tgaaaaaacg 600  
 gagga 605

<210> 85  
 <211> 603  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(603)  
 <223> n = A,T,C or G

<400> 85  
 acaggggaatg aagactcgaa gaggagatgt cactttcctg gaagatgttt taaatgagat 60  
 tcaattaagg atgctacaga acatggcttc aattaagaca actaaagaac tcaagaaccc 120  
 acaagagact gcagagaggg tcgggctcgc agcactcatt attcaggact tcaaaggttt 180  
 actcttatct gactacaagt tcagctggga tcgtgttttc cagagtcgcg gggacacagg 240  
 tagagtaaac tgcanagctg cctgtctgtg acttccaagg ctaggtcata aaaggagata 300  
 aagctttctt tggctgggtg ggctgcttgc tcttgaacct tcagtctatg cagcgaacat 360  
 gcctttccag ccttctgtgg ttgtagagt natagaaagc aattggatca ctatngacag 420  
 cggggtaaaa cttgaggaag caacctccgc cagnggtac atggagganc cctgaannaa 480  
 aggaanaaaa gggcacangg gcttaatcct gtcttggaat gcttncctnt gcaatggnn 540  
 atttcaatgg ccnagccaat tatgccatcc ctgcnttaan accatgggcc ttcnttgnca 600  
 ttn 603

<210> 86  
 <211> 583  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(583)  
 <223> n = A,T,C or G

<400> 86  
 actgtaggta tttattaata atagcaatga agatgaaaga gtgatgtatc agagaggtgg 60  
 agataaaatc agtaaaactt agacactaaa tgatagggga aggtggagga gaggaatgag 120  
 cctagaaaac ttagaatata atggttctaa aattaaccaa agtaagggaac acaggcatta 180  
 gagtaggttt tgcagagaat gaatgtttta agacacacac aggtgtctct gggacaacca 240  
 agaaaagtgc aacaggcaga tggattgagg agtctggcta aagataagga tttaggaact 300  
 gctgaattaa aattacccaa gcgtgagaag tgggtgtgtg attaagagag aaaaaaaaaa 360  
 tggaggtctg aggaatacct ttaanggatt aatgaanang cccaaaggtg ggggggtggt 420  
 caggagtgc ccaaagttag aagtcaggga ataaacttta aagtnggggt gtcaaatgc 480  
 naatccgaaa aaaagtnagt nccttggccg gacccctag gcgaatccac ccttgnggcc 540  
 gtctanggat ccacttgncc aacttgggaa nntggctnct ttt 583

<210> 87  
 <211> 332  
 <212> DNA  
 <213> Homo sapiens

<400> 87  
 acgcgggggc attgctagaa gccggcagga gtgactctcg gcatggagga cccatctcct 60  
 agcacacgtg cccactgaag tggcaccaac agaagtttgg cttgaactaa aggacatttt 120  
 atttttttta ctttagcaca taatttgtat atttgaaaat aatatatatt attttaccta 180  
 ttagattctg atttgatata caaaggacta agatattttc ttcttgaaga gacttttcga 240  
 ttagtcctca tatatttata tactaaaata gagtgtttac catgaacagt gtgttgcttc 300  
 agactattac aaagacaact ggggcaggta cc 332

<210> 88  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(592)  
 <223> n = A,T,C or G

<400> 88  
 cgaggtaggc ggggacaacc agctgactcc cgtagaggaa gacactgtgg aggccagttc 60  
 tggagctatt gcagcctcgg ttgcccggcc cgggacccga acccgaaaaa gttatcgtca 120  
 gaatgtcggg caaagaccga attgaaatct ttcctcgcg aatggcacag accatcatga 180  
 aggctcgttt aaaggagca cagacaggtc gaaacctcct gaagaaaaaa tctgatgcct 240  
 taactcttcg atttcgacag atcctaaaga agatnataga gactaaaatg ttgatgggcc 300  
 aagtgatgag agaagctgcc ttttacttag ctgaagccaa gtccacagca ggtgacttca 360  
 gactacagg tattccaaat gtcaataaag cccagtgaa gattcnagcn aagaaagata 420  
 tgtacnagt gtactttgnc ngatatttgaa cattccntga aggactgcng gttttnactg 480  
 cttgggttaa cccaagtggg gacnnnttgc ttaaattaaa gaggaatttt gcccaancnt 540  
 gggacttctg gnggaattac ttttttgaa actttttggn accttgagn aa 592

<210> 89  
 <211> 630  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(630)  
 <223> n = A,T,C or G

<400> 89  
 acgcgggggt ctttggggccg gcgcgaacca tggccggcat ggtggacttc caggatgagg 60  
 agcaggtcaa gtcctttttg gagaacatgg aggtggagtg caactaccac tgctaccacg 120  
 agaaggaccc ggacgggttg taccggctgg tggactattt ggaagggatc cggaagaatt 180  
 ttgatgaggc tgccaagggtg ttgaagttta actgtgaaga gaaccagcac agtgatagct 240  
 gctacaaact gggggcctac tatgtgactg gaaaagggtg tctgacccaa gacctgaaag 300  
 ctgccccagg tgctttttga tggcgtgtga gaaacctgga aagaaatcaa tagcancatg 360  
 tcacaacgtt ggcccttctg cacatgatgg acagggtaat gaagatggcn acctgacttt 420  
 ggaaaaggca aggactacta ccaaaggcct gngatggngg ntatctttca gtgcttnaaa 480  
 cctaattgat ttttcttcag ggggcccaag ctttccaagg acatggcctt gcctgtnaat 540  
 cttcattaaa gccttgacct ggatcatatt ggcccttgcca tgcaatccat ttacttggcc 600  
 ggacacctan gggaatcacc actggggcgt 630

<210> 90  
 <211> 653  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(653)  
 <223> n = A,T,C or G

<400> 90  
 ggtaccactt cactccagcc tggcgacaga gtggaaactcc gtctcaaaaa ataaaataaa 60  
 ataaaataaa gcaaaaatat aaaatgttaa aaaaaaaca aaaaaaggga aaaaggaagc 120  
 tgattgcctt ggtgagtcaa cactgggtat tttctgacca ctatttgaaa caaaaaagga 180  
 aaccactgat attctatgca aagatctgtt cctggaaggc actctgcgga gacaccagga 240  
 gaacttttat caatccttca ttgatttgaa gtaaaagtgc taaagcaatg gttggtgggt 300  
 ggcaacccat tagcagatca caaaatcact gtagtgggtg actaaacaag aggaaacaca 360  
 agacggcatc ctgtgtaact ggggttaagc attactctct gaaactcatg gcatcagttt 420  
 cctcttaggc tcttcccaca aagtataatc atgttcatat cagtttacaa tcccttgacg 480  
 tcccatcgat ttgtgagaat atcccaagtc atncacagng gagnctggaa atggtcntan 540  
 ttgtcctgcc cggcngccgt tcnaanggcg aattcaacac actggcngcc gttctaattg 600  
 atccaactcg naccaacctg gnggaacatg gctactgggt ctgngnnaaa tgn 653

<210> 91  
 <211> 657  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(657)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 91

actttttttt	tttttttttt	tttttttttt	ggagaaaagc	ctnactccgt	tgcccacgtt	60
ggagtgcagt	ggcgtggnc	tagcttattg	catgcagcct	naacctccca	ggctnaagca	120
atnctccnac	ctnnncgtgc	tgntttnttg	gaactacnca	tnacnncnat	tatgcccanc	180
tngtngttgt	naatttaaag	tganaccatg	cncncagggn	gnatggcntt	nnntancnan	240
catgcatgct	cagctgtgta	gtgcacgcac	aggataaatg	gaagggggat	ttgatcaggg	300
tttttgtcac	atnagcattn	naaatccgna	ngactgccnt	gtgtctgcct	ttgnaagggc	360
ctgggagtat	tctgtgtage	ctttgnaaat	aagggnaaaa	tgngcncctg	ccaaagaagt	420
cnttgctact	ntgggtgngt	caaaatntcc	ctgtaacttg	tcaatggnc	caagcttggg	480
ggngtntttg	ggntcttggg	tgtctttttn	acgtctattg	nccatgtggt	tcctatatga	540
cacantcctc	ntnataatcc	ntganaattg	ctaanttgc	cttttttttt	ttttnanatt	600
nattttgctn	ttaaantagc	ttaanncttt	ntttatcctn	gggcancnca	anncaat	657

&lt;210&gt; 92

&lt;211&gt; 653

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(653)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 92

accataaaac	cattaaaagc	aataaataac	tagagtcatg	tgagatgttt	caaagactgc	60
tggaggtttc	tgtaaacagg	ggtaatcaga	aatattaccc	ttgtagatag	ccctctcata	120
ccagtaaata	caaagagtta	aaattccaat	gccacagtgt	aacaggttaac	aatctatttt	180
gtaattttta	atattactac	attaattcac	cctgagaata	cagaggaaac	atttaataca	240
agacattctg	atatgntttt	tttcccat	gnatttgctt	tcttctggnt	ttcatcagcc	300
ctttaagggc	acagatat	taatttaaag	ggtgatttgg	atatgctttt	ttggtaactg	360
agatttatgc	cacagtcaga	tactggtgat	agaaaagccc	aaaaaggntt	gnagaaaaga	420
ggcaagcagc	aatccccagg	cagaaaagac	ngaaagtctt	gaaaaagaag	aggagtaaaa	480
atTTTTTTaa	gctgntcaat	gccctgtatt	tgggnacaag	tacctttatt	ttccttttagc	540
tganggnant	cagagtaacc	gaattgggag	nnnactat	tcnctggnaa	ggaaaataga	600
atTTggnaat	cccnggaang	gtnctngaaa	tnnagcccca	tccatttggn	gng	653

&lt;210&gt; 93

&lt;211&gt; 640

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(640)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 93

acagagaaac	cacaggttgc	cccttccaca	gctggataga	cttatccaaa	acggcaggat	60
ggttctgtat	taatcttttt	ggaaagcatg	tctgtattaa	gattgcaaaa	catacagata	120
gctaccacaa	attaggtcaa	acgactgatc	aagttgtaac	atctgtgagg	tcaaattcca	180

aagtgcctag	atacacat	atacaacaga	ccataagagc	tgaattcctt	acaaatgtct	240
ttatgggcat	gtaaaattga	ctctgcattt	ctgcatgtgt	gcattccata	agagagacca	300
gtctgcactg	agtcataat	actccaactt	gaaaaagtaa	gtgnaacaac	tggntaatca	360
tgcaagtctg	gttgnaatat	aacaatgact	ggnaaaacat	gaattcctcg	cacagtagta	420
ataggngcac	tnattttaaaa	ccctnccgaa	aaacctgnat	ttggtgcaan	atctganttt	480
aagnggtagt	aacttgacnt	ttaaaaatag	tttgaacnat	ttanaaaagg	aagccaactt	540
ttacttaaaa	gaatcccaag	tggnaaaanc	tggntttcaa	tggaatgaac	tnggtgngac	600
ctncccta	nngacettga	gcctatnagc	taatntang			640

<210> 94  
 <211> 658  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(658)  
 <223> n = A,T,C or G

<400> 94						
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agtatcaagc	acaaaaattg	atggactgat	aaaagaacta	tcttagaact	cagaagaaga	120
aagaatcaaaa	ttcataggat	aagtcaatac	cttaatgggtg	gtagagcctt	tacctgtagc	180
ttgaaagggg	aaagattgga	ggtaagagag	aaaatgaaag	aacacctctg	ggccttctg	240
tccagttttc	aagcactagt	cttactcagc	tatccattat	agttttgccc	tttaagaaagt	300
catgattaac	ttatgaaaaa	attatttggtg	gacaggaatg	tgataccttc	cttggntttt	360
ttttgcaanc	ctcaaatcct	aacttcctgc	cccacaatgg	tgagcaggtt	cccctgatac	420
ttcttttctt	taatgattta	actatnaact	tnataaata	acttataggg	gatagggaaa	480
attcctgaat	tccagaatgc	catctgntaa	aaaagaatnn	aaatgggaag	tnggactnaa	540
aaggagccaa	cagcatgctg	cgggtggnng	cacttctttg	cnctatccca	ggaaggaagg	600
tccccatttg	gaaaggggtt	cttntctcact	ggnaccggtt	tgacntnatt	ggnacncc	658

<210> 95  
 <211> 392  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(392)  
 <223> n = A,T,C or G

<400> 95						
actcagactt	gatcgattaa	tgaagtgggt	attttggcct	ttgcttgata	ttatcaactc	60
actggtaaca	acagtattca	tgctcatcgt	atctgtgttg	gcactgatac	cagaaaccac	120
aacattgaca	gttggtggag	gggtgtttgc	acttgtgaca	gcagtatgct	gtcttgccga	180
cggggccctt	atttaccgga	agcttctgtt	caatcccagc	ggccttacc	agaaaaagcc	240
tgtgcatgaa	aaaaaaagaa	gttttgtaat	tttatattac	ttnttaagtt	tgatactaag	300
tattaaacat	atttctgnat	tcttccaaaa	aaaanaaant	aatnaantta	naanttttta	360
aanatanaaa	taaaataata	angaccattg	ag			392

<210> 96  
 <211> 655

<212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature  
 <222> (1)...(655)  
 <223> n = A,T,C or G

<400> 96  
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 actgttgggt tgtatggtaa acacatatat ttttgtaaga aactacccta ctctttttcc 120  
 agagtggctc tactttttac atacagccac tcatacaatt cagacagcaa tgtatgattg 180  
 atccagtttc ttcacatcct caccagcatt tgggtattact actatttttt atcttaacca 240  
 ttcacataga tgtgtgtaat gataccacat gtgggttttaa tttgcatttc caatggctaa 300  
 tgatgttgag tatctttttg tgtgctaatt tgccatctat gtatcctctt cggtgaaatg 360  
 tcttcatgtc ttttgnctat tttctattta agncatttgg tctttttact attgagtttg 420  
 agagggtttt tatatatcct agataaaaaat cctctgggtan anatgtgggt gcctggaatt 480  
 ttaacataac ttctacccan ggaaaataag taaaatttcc acccttgctg gcnagcctta 540  
 cttaatnccg gccttaangg tccttctaga gaattaagaa gatttgaggt ttaaatanaa 600  
 tcagggcntt aaaaagtaat cctaaaatcn gggttaagca agccatatcc tgggg 655

<210> 97  
 <211> 224  
 <212> DNA  
 <213> Homo sapiens

<400> 97  
 acaagtttaa ggtaggacgc agcattttat agtgttacgt ccttctctcc cacatttctg 60  
 tgaggcgga caagaacaat tacttgaccc tggaggaaga cgacgccttg tggtcaggga 120  
 gagaacagca gttcatgctg gctgcctcgt ctttccaggc ctgctgctgc ccaggcttct 180  
 actgaccttg ttaggctctga ttctagaaaa tgaaggcagg tacc 224

<210> 98  
 <211> 582  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(582)  
 <223> n = A,T,C or G

<400> 98  
 ggtaccacca tgccctgggtt attgttttat ttttttggca gagatgggtc tcaactgtgtt 60  
 gccagggctg atctcaaact cctggcctca agcgatcctc ccatctcagc ctcccaaagt 120  
 gctgggatta cagacctgag ccaccacacc tgggcaacag agtgaaacct gtccctgttt 180  
 tcctgctctt actctcacct ctgaggcctc ctctgcctgg aagagattac agggaaattc 240  
 caggcagccc ttgtcaattg tttttatgaa ttctttacct gtccctttta aagacaagga 300  
 aactgagggc caaagttcta agttgttttg caaatggagt ctccctacct cagctcctgc 360  
 aaggacctgg gggaccccca ggtccagcag ccacatgatt ctgcacagac agggacctag 420  
 agcacatctg gatttaagcc caccctggca actggctgct agagactncc aagatgccga 480  
 taataggatc tgcnttaaa aaatctggat tctggcctgc ntaantgcta cttcatttgg 540  
 ctacaaaagnt ttaaggngga accnttaaaa ccttccccaa aa 582

<210> 99  
 <211> 619  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(619)  
 <223> n = A,T,C or G

<400> 99  
 ggtacagtgg tcctttttcag agttggactt ctagactcac ctgtttctcac tccctgtttt 60  
 aattcaaccc agccatgcaa tgccaaataa tagaattgct ccctaccagc tgaacaggga 120  
 ggagtctgtg cagttttctga cacttggtgt tgaacatggc taaatacaat gggatcgcgt 180  
 gagactaagt tgtagaaatt aacaaatgtg ctgcttggtt aaaatggcta cactcatctg 240  
 actcattctt tatttctatt tagttgggtt gtatcttgcc taagggtgcgt agtccaactc 300  
 ttgggtattac cctcctaata gtcatactag tagtcatact ccctgggtgta gtgtattctc 360  
 taaaagcttt aaatgtctgc atgcagccag ccatcaaata gtgaatgggc tctctttggc 420  
 tggaattaca aaactcagag aaaatgtgcc catcangaga acatcataac ccatggaagg 480  
 atnaaagccc caaatggngg naactgataa tagccctaata ggctttaaga atttgggcac 540  
 actnttacct agnggaaccc atttgancn anggggctta aaggcttntt acttcaactg 600  
 aaagttnagg gaaaaaaan 619

<210> 100  
 <211> 614  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(614)  
 <223> n = A,T,C or G

<400> 100  
 acgcggggga agcaaaggag aggggaagctg gaagcacctt tggcccggga cagaaatctg 60  
 gagagcttgg ctacctccat cctcctcagg cgggagcagg ctctctgaga gagtccaggt 120  
 cgtaggagtt ttacgactta gaaaagcggg ctgcagattc ctctctgggt gtttggttca 180  
 agccctggct ccagcctcac tctcagtcct cccgggagtt cgtgggattt ggaccttaga 240  
 ttattagtat tattttgagg gcctcctgtg tgtaagcact gggtgtgcgc agatggctgt 300  
 gcagagggcc atgaggtaga ggctggggaa atgagggctt ggaggtgctt gaggtatggt 360  
 ctttacctac gtgaaatgtt ggaggttgag atgaaaactc ttgctttgaa atcttcatgg 420  
 aggactacat catttcaatc ctgaatctgg ctcaattcta ttaatcactt aatacctgga 480  
 ttaaaaaacg nttaantggg ccaggcncaa tgggtcacgc ctgnaatccc agccttttgg 540  
 gaggccaagg cangccgat acnttagggc ngnanttnaa accancttgg caaattggga 600  
 aaccgcntt tntn 614

<210> 101  
 <211> 625  
 <212> DNA  
 <213> Homo sapiens

<220>



<221> misc\_feature  
 <222> (1)...(625)  
 <223> n = A,T,C or G

<400> 101  
 ggtactttgc ctacggcagc aacctgctga cagagaggat ccacctccga aacccctcgg 60  
 cggcggttctt ctgtgtggcc cgcctgcagg caagaagggg ttaaaagtgg aatgtatgtt 120  
 gtaatagaag ttaaagtgtc gactcaagaa ggaaaagaaa taacctgtcg aagttatctg 180  
 atgacaaatt acgaaagtgc tcccnatcc ccacagtata aaaagattat ttgcatgggt 240  
 gcaaaagaaa atggtttgcc gntggagtat caagagaagt taaaagcaat agaaccacaa 300  
 gactatacag gaaagggtctc agaagaaatt gaaagacatc atcaaaaagg ggnaaacaca 360  
 aactctttag aaccatancn gaatatatct taagggtatt cctatgtgcc taatataata 420  
 tatttttaac acttgagaac cagggatttt gggggattct ccaacgtttg ttcaatttta 480  
 agaantgggt tgaaggagtt ttttacttgg gtnattcntg gttttaggat tttnnannng 540  
 aanntggntt ngngntttgn nnttttaann gggntntttt ngggtcttna aatttttcca 600  
 anaaanngtn gnttccttcc cggnn 625

<210> 102  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(605)  
 <223> n = A,T,C or G

<400> 102  
 ggtacaagaa agaaaaaata taaaaacaag tctgctgagt gtcgggagtt ggtgagggat 60  
 atcctaccat attgtgacgg agtccaaata gaaaacatgc agcaacagtt ctccctgcttt 120  
 atcagctccc tggaaaataa accagtaacc ctggtagtgc agtaaccatt tgggtaaacag 180  
 gacaaacttc ctgatggaca cagatagtaa ttcactgcat tcccttctc taacttctct 240  
 cttcacacca attccttttc tttcctttta gatgggtttc atcctgttga caaaagattt 300  
 ggtttttatt gttaaagtaa gcagataata tcttgattga agtattcaat gatttaattg 360  
 aggatgcttg gggatcaaac tttgtaaaaa ggtcaattaa gctagttagc agagactatc 420  
 agtggcttgc agaaaaaaaa ntngatata tggtttggtg aaangcccaa aggataaccg 480  
 ngaaaaatcc tanggatacc gggacctaata taatcaaagc canaggggga ccttggttaa 540  
 anccnttact tnggggagg gctnaanggn ggntccaaac naaattgggt cccaacgggc 600  
 ccggg 605

<210> 103  
 <211> 251  
 <212> DNA  
 <213> Homo sapiens

<400> 103  
 acgcgggatt ttacattcca tcttttctga agattgtcct acaatttgga ttttgatcat 60  
 gacaaagaag attaaaattt cattagcatg aatgcaattt gttaaagcag actgatttgt 120  
 ttctaagata tttttggttt ttttaaaact gataataatg ctgaattatc ttaagtgaga 180  
 tgtaagccc actttgttct tttaatgtaa tggagcttat gggtagaaga ccatgtctac 240  
 taattacaaa a 251

<210> 104

<211> 293  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> misc\_feature  
 <222> (1)...(293)  
 <223> n = A,T,C or G

<400> 104  
 ttaatcttgc acaaattggca ttttattaaa gaaaatctaa tttacaaagc tttgtaaatt 60  
 ttaagaaaaa cattcataga tcataaaca aaatttcaat atgcaatatt caaatttaca 120  
 agaaaataag cacaaacttt tagacagtgc agttattgct gcactccttt aattccttat 180  
 ccagagccca aaaaatgtag acaaacccta aaaatgtagc agaagcattt ccgcacactg 240  
 gtgtccagaa tctagtttgc gcanaaatgt ttccactaga tttatagagt acc 293

<210> 105  
 <211> 586  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(586)  
 <223> n = A,T,C or G

<400> 105  
 acatcatttc tgccatgtgg gacattttct tgggaatata caagtaatac tccatgtagc 60  
 ctgacaggtc ctcaatgggc acatcatcca cgaagactcg agcttgctca gaacaggatc 120  
 ggggagagcc agacagagtt ctggcggtgca gcgactgaga gtagtcctca agtgtggatc 180  
 ttcgttctgg agccaaggga gggacactct gcgggcctga aaaggaatac acttccatat 240  
 catgccatct cttacactgg cattccttgc ctatgcatgt gcatggcttg ccttgggtta 300  
 gcttggaac tgattgaaag tcagagagat cactggcttt gagacttgct tgggggactt 360  
 gggtagccgt cagaggagtc ttccttctta ctctctgatg ggagccttgg aacagaaagt 420  
 tctcaaangc tnaacgactg gccctggggt gaatagcatc gagagaagta naccttcttc 480  
 ctgnactgaa ctnttaaggg gatgaaatc ccagccaatg gtggccttan gnnangcaan 540  
 ntggcttttg gcttgaatta ctggntggaa aaaacctttg gccntt 586

<210> 106  
 <211> 644  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(644)  
 <223> n = A,T,C or G

<400> 106  
 ggtacnttga ttgctcanat ataangaaat ggcccaatga acgtggntgn gggaggggaa 60  
 anangaaaca gagctagnca tatgtgaatt gntctgtggn ataaacatgt taaaacanac 120  
 aaanatggnt atttttcttt ncctccggac agtgcacatt atcatntgaa ctacctgggg 180  
 attctntatc anaactggtc ttgttgaata tttatactta attgaaataa ttccttann 240

```

gaggcntgtt taaaacgtat taacaggana ttgtgtntna nacatttaat gaaanacgaa 300
attccacnag aatganntaa gtcactttcc aagtgggtgt catttttgta aaccctngtt 360
tacctgtttt gctattntta ccntttcatt tggaangatg ntttgagntc gtanttacca 420
gggnaaagac gggttncctc ctngctgnnn cttnagccnn tgctaaaaag cnttaatttt 480
ntgcnattng gnncttcctg ctggtaatcn tggaaaaant gggnaantc cagctttntt 540
tnttggcngc ccaaaaaangg attcnnantn gnnannnaac ctttgggtcc ntaannaana 600
aaangtatnc anaangaacc ttgncatgcc ngccnntnta aang 644

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<210> 107
<211> 618
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(618)
<223> n = A,T,C or G

```

```

<400> 107
ggtacagact tgccctttga aatctatacc tctggatata ttagaggcat tttattaaca 60
aaggcccttc taaatgtgct atttatTTTga caataactat cagatttgcc ttaattttgt 120
gtttatagca tttatcaaaa cgtatcctca tagactttat gcagattaat atgggtcaatt 180
gattttggata aaagaaagta atttcagggg ttgttttttaa gccaggacaa gaagtgcaaa 240
tgccctcttg aagcaattta ggctaaactg attttgaaat ttcaaaatgt tttattttac 300
tttgttttat taagccagga caagaagtgc aaatgccttc tttgaagca attcaggcta 360
ggtaaacccg attttggcca tttcaaaaacc gttaaattta ctttgggtta atatcagagt 420
cttataaaaac tgntgncaaa aattttctgaa ggctttngaa aagggttggt agtggaccct 480
gcccggggcg ccgntcnaag gcgaattcag ccactggcgg ncgtactagg gatnccactc 540
ggacccanct tggcggaatc atgggcataa ctggttcctg ngtgaaatgg gatccgttac 600
aattcccaca acatanng 618

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```

<210> 108
<211> 620
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(620)
<223> n = A,T,C or G

```

```

<400> 108
ggtaccaaaag gagaatttgg agagctggct aaattatttg aagaaagaat tgccaacagt 60
ggtgttcaga gcctcaacaa aaccaaagga taaaggggaag ataaccaagc gtgtgaaggc 120
aaagaagaat gctgctccat tcagaagtga agtctgcttt gggaaagagg gcctttggaa 180
acttcttgga ggttttcagg aaacttgagc caaagccatt cgggttgagg taattggttt 240
cccaaagtgt gggaaaagca gcattatcaa tagcttaaaa caagaacaga tgtgtaatgt 300
tggtgtatcc atggggctta caaggagcat gcaagtgtgc ccctttggac aaacagatca 360
caatcataga tagccccgac cttcatcgaa tctnactta attccttctt tngnccttgn 420
ttttgcnaag ttcanccaag gttttgaagt antaaaancc gatggaagct tgccantgcc 480
atcctttcca agcttgatgc ttgacaggta gtancttgnc cgggcccggc gttcnaaagg 540
gcgaattcaa cacactggcn gccgtactat ggatccgagc ttggnccaaa cttgcgtaat 600
catggcatnc tggttcctgg 620

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<210> 109  
 <211> 317  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(317)  
 <223> n = A,T,C or G

<400> 109  
 tttgtatttt tagtagaggc agtggtttcac cgtgtagcc aggatgggtct cgatctcctg 60  
 acctcgtgat ccacccacct cgacctcca aagtgcgtggg attacaggcg tgagccacca 120  
 cgcccgccct cttttttttt tagctgcca tctttttgaa ggaatattct tacctctact 180  
 ttgtcacctt ctactggctc cttactaaa atctgccatt tggctctctg gttaacagtc 240  
 ccttcctgta aagtctaaaa tcttaattct aaatccacag ttttaattcac aagctagtag 300  
 cttggccgng accacgc 317

<210> 110  
 <211> 603  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(603)  
 <223> n = A,T,C or G

<400> 110  
 ggtacattca ggatccctcg gccaaaggact ggaccagaag aacacttggg aatcttgggt 60  
 ccacttatca aaggtgaagt tggatgatc ctgactgtgg tattcaagaa taatgccagc 120  
 cgccctact ctgtgcatgc tcatggagtg ctagaatcta ctactgtctg gccactggct 180  
 gctgagcctg gtgaggtggg cacttatcag tggaacatcc cagagaggtc tggccctggg 240  
 cccaatgact ctgcttgtgt ttctgggac tattattctg cagtggatcc catcaaggac 300  
 atgtatagtg gcctgggtggg gcccttggct atctgccaaa agggcatcct ggaaccccat 360  
 ggaagaccga gtgacctgga tcnngaattt gcattgggtg tcttgaattt tgatgaaaat 420  
 aancctggna tttggaagga aatgtgcaac catgggtcca agaattccagc cnnattaacc 480  
 taccggatga acctttnttg gaaaccataa aatgcctgca atcaatggga actttttcca 540  
 accttanggg cttaccatga ccttgcccgg cgggcenntt aaanggccaa ttccacccc 600  
 tgg 603

<210> 111  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 111

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acattttaagt tcccatgtta cagaatccca tattgtgact atttcctcaa aactaactgc      60
tagtaaagaa ccatcttcgg agaaacaaca gttagttgct tgatacttgt gataactacc      120
aacaaagtca caggtccagc caacagcttt tttgtatatg tcagagtcac ctgttaatat      180
ccatactttg aagtaaccat ctttgctagc tgtaaccaag gtgggctgtt cagatttttc      240
tgcattacag aaacagagag ctgtaatgca gtcttcgtgt ggcatgttaa ttttagtggt      300
aagaataaac ccttggtgtt tcttattata catccacagt ttcatttgca attcaagctc      360
aagtttccct tcttgccgc tgggccactg gtgcaagcca gttaccaaaag cagccaatgc      420
aagccttggt aagtcaattt ggatcaganc ataatcanta atatatcctg ctggataata      480
ctaaattgga tactggntat cactntggag agaataaact gcaggtggcn ggntttcatt      540
caaaccaagc tttagtcttg gacaatcatn aaccagnгаа atactcctat ntttn      595

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<210> 112
<211> 523
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1) ... (523)
<223> n = A,T,C or G

```

```

<400> 112
acaagagcta ttagagatgc tgccatatgg atgggcaaaa ctgagccaat cccacttagg      60
aatggaaggg ttggacatgg aaggaggatg ataaacgagg agttggagaa aaacgcaagc      120
ccagtttttg ctagagtggg aatgaaagtg ggaatgaggg tcttggtttt agtctcttaa      180
ggaccaggaa gcaattttta aacttccttg gtttttctga aagcagcata ttcaaaatgc      240
cagcaaaaac tctaacaac tgcaaaacca aaagaggatc aaagctcacc aacatccctt      300
cttattgctg aaaggctcta aaattcagga tgccctgttc ctttgtaaaa gggaaaataa      360
ttaaagtctg atttatggta atcataccac atcacacttc taaaaaata tttcaagtgt      420
gtgaccaggg gaccgtttga ccnccatttt attaaccttc actttantgg gaaaaataaa      480
accttttcca gggccatttn atnccaggag ttttagtagg ggg      523

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```

<210> 113
<211> 578
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1) ... (578)
<223> n = A,T,C or G

```

```

<400> 113
acagtgtaaa taactaagtt gttaactgtc aagtcagtt atgtattctg taagttgtgt      60
tctagtcttt gactaaaatt tatcatctct tataatggga cttaatcttt ctctaaaagc      120
atataagagc ttgtcaatag agcaatcaat caaaaagatt ttgtgattca taacattgaa      180
gttagtctgg ttaagagttt tggtttagac ttcatttata ttttccttac taatatctaa      240
tatttaatga ataatgatca attttttata aagttattaa tatgatcagg gaaacctttg      300
ggacttctga caggcatctg gtgaagagac aattcaagcc ttagtgacta tttagaatag      360
ccagtgatca ctagctaatt ctcatatcca tgcccttttt gccctgggta cagtcttaaa      420
agaggtaaaa cagcaaatat tttttttaag ggaactataa ccctangaat tcctgaaaag      480
aatttcaaaa aaaataagac cctgtggcca tggngnccaa acntaagacc tactatggct      540
atattggtcc attaaaaata aattactact aatccaaa      578

```

<210> 114  
 <211> 613  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(613)  
 <223> n = A,T,C or G

<400> 114  
 acggtagtaa gaaacctttg agatctttct gactttttcaa aattagagaa agcaaattggg 60  
 atggatagat tttttttttt ttttcaaggg gggcaggaag gtaattggttt gagtagcctt 120  
 tgtttaaaaa aaactaaat atatttaaaa ggccacattt atattttttt cacaagaacc 180  
 acataataaa ttccacttct tgacctgaat ttggaaatcc gaaattacta atccaggcca 240  
 ggtgtggtgg ctcatgcctg taatcccagc actttgagag gccgaggtgg gcagatcact 300  
 tgaggcctgg agttcaagac caccttggcg aacacgggtga aaccccgctc ctacgaaaaa 360  
 aaaaaanatat aaaaaaagta ctggttatta accaaccagc ttagaaaaat aatcatggtn 420  
 gacacnttan ttcattcttc taaaagcctg ttgatctggg ccttcctggt gccagcattt 480  
 cccctttttt aaaaatgggg ggccttttct ttaattnnac ctctgngngn aananaattt 540  
 gaagggcccc aggaagtntt ttgggcncct tgaagcgttt tncacncgtn tagattctnt 600  
 gattaaatcc tcc 613

<210> 115  
 <211> 190  
 <212> DNA  
 <213> Homo sapiens

<400> 115  
 ggtacattgc cactgagtaa agagtggcac cagccacggt ggtaggtgga agaaacatag 60  
 atcccaatga ggacacaaag acgagaccca ggcccactcc caggggtgca cccatgttca 120  
 gaaacttttc actgggcgca cacatggcca cagtggagag gcctcccaca atgccagctg 180  
 tgtacttttt 190

<210> 116  
 <211> 610  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(610)  
 <223> n = A,T,C or G

<400> 116  
 ggtactcttg gtttatcaat gggacgttcc agcaatccac acaagagctc tttatcccca 60  
 acatcactgt gaataatagc ggatcctata tgtgccaaag ccataactca gccactggcc 120  
 tcaataggac cacagtcacg atgacacag tctctggaag tgctcctgtc ctctcagctg 180  
 tggccaccgt cggcatcacg attggagtgc tggccagggt ggctctgata tagcagccct 240  
 ggtgtatttt cgatatttca ggaagactgg cagattggac cagaccctga attcttctag 300  
 ctctncaat cccattttat cccatggaac cactaaaaac aaggtctgct ctgctcctga 360  
 gccctatatg ctggagatgg acaactcaat gaaaatttaa agggaaaacc cttangcctg 420

aaggtgtgtg	ccacttcaga	gactttacct	taacttgaga	cngntcaaac	ttgcaaacca	480
tggngnggaa	atttgccgaa	ctttacactt	tgggcagggt	ttttcccaga	agtcanaaca	540
agaactcctn	ntcttganaa	gggttttanc	ccctttnaat	ggccttgctt	atgctgcctt	600
tttcgtttgg						610

<210> 117  
 <211> 608  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (608)  
 <223> n = A,T,C or G

<400> 117						
ggtacgcggg	gggtattatt	tgtgccaaacc	aatgatgctt	ttaaggggaat	gactagtga	60
gaaaaagaaa	ttctgatacg	ggacaaaaat	gctcttcaaa	acatcattct	ttatcacctg	120
acaccaggag	ttttcattgg	aaaaggattt	gaacctgggt	ttactaacat	tttaaagacc	180
acacaaggaa	gcaaaatctt	tctgaaagaa	gtaaatgata	cacttctggt	gaatgaattg	240
aatcaaaaag	aatctgacat	catgacaaca	aatgggtgtaa	ttcatgttgt	agataaaactc	300
ctctatccag	cagacacacc	tgttggaat	gatcaactgc	tggaaatact	taataaatta	360
atcaaatcat	ccaaattaag	tttgttcgtg	gtagcacctt	caaagaaaat	ccccgtgact	420
gctatagacc	cacactaacc	aaaggtcaaa	attgaaagggt	gacctgaatt	cagactggat	480
taaagaaagg	tgaaccatt	actgaaagt	gatncatggg	gaagccattt	tttaaaaaat	540
ncccaaaanc	attgatggga	attccttng	gaaatacttg	aaaggaaccn	nnnnagacca	600
atcnttcc						608

<210> 118  
 <211> 578  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (578)  
 <223> n = A,T,C or G

<400> 118						
actccactta	gcaaatgccc	tgccagcaaa	gtcacagatg	actttttttac	ccaatcttag	60
gtaaatctgg	attatctgcc	caaccgtgca	agtcaataag	ccacccttga	aaactgtgtc	120
aagatttgag	gaaacagggt	ttaagaacct	atccaacaca	tgattccata	accaatacat	180
cttangttgt	tttaggcaaa	taggtgtatc	tcttgaatca	ctgatggatt	caatatcaag	240
atctataatt	ttcacgttta	aaatttactc	tgccgaggac	attttattgg	taaagcataa	300
accagttagt	ttgacagaca	cnaaaaagaa	aacnaaatgt	tcacagtect	atcttcgtag	360
ggattcttgg	ctataaaaaat	tggcttcagg	ttcaagggtct	tagaccactc	ttctaaggct	420
nctactggat	atantantta	ccacttgggg	nccaaactta	aaacctcntg	gactttttcc	480
ccttanggac	nangaaaaac	caaggggttg	tggtttgaac	tcctacact	tggngnnaaa	540
ncttttcttg	gnngnatnta	aanattaagg	ggcttttn			578

<210> 119  
 <211> 584  
 <212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(584)

<223> n = A,T,C or G

<400> 119

actgtcttag	aatattat	ttttttt	gt	atttgt	aaat	ctgtgg	acaa	aagagg	gttt	60
cctcactcct	tttactcact	gggctcat	ga	cagtga	agga	gatgctccat	ctgcttctcc			120
ccctttctct	tgctgtagtc	caatgtgcta		tgagcatcag		cttactttgc	cacttagagc			180
aagcaaaacc	cagtgc	aaaga	gtctcg	ttca		gctctaaata	ggtttgcttt	cttttagtta		240
cagtgcccat	tttgaaattg	cctatacagt		cttagtgacc		atttaaaccg	gacgaactan			300
gcgtttaatt	ttcacttctt	catgttnaat		tngcagttca		anatttatag	naagatggnt			360
atttcgaaaa	nacaaaaaan	tggnttttta		anaaaaaag		tncnttggtc	ggcgaancan			420
gcntaagggg	cgaatttcca	gcncaaactgg		gcnggcccg		nncntagngg	atccccaacc			480
tttggtaccc	angcttnggc	nntaancaat		tggncanag		nttggttccc	tgggggtgaaa			540
antngtnatc	ccgttcccaa	ttcccnaca		ncnnaccnng		cccg				584

<210> 120

<211> 587

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(587)

<223> n = A,T,C or G

<400> 120

acgcgggggc	cgtagcagcc	gccgcccac	cctctttgtg	tgctttggaa	agccgcggag	60
ctgggtgggtg	ctacagttgg	tggtgggggc	ttaggcgagg	gacgttaccg	ggaagttgca	120
ggcggggagga	ctcttcccca	tccagtcacc	tgacaggtca	caaacatgtc	agacaaaagt	180
gaattaaagg	ctgagttgga	acgtaagaag	cagcgactgg	cccaaatacag	agaggaaaag	240
aagagaaaaag	aagangaagg	gaaaaaaaaa	gaaacagacc	anaataagga	agctgttgct	300
cctgtgcaag	aagaatcaga	tctttgaaaa	aaaaaggaga	gaagctnaaa	gcatttgctt	360
caaagcatgg	ggctaacttc	agaaatcccc	ccattggnc	ttcctnctaa	tncttncatn	420
ccttcaaaat	ctgtggagcc	ctttccaagg	tgaaaacttgn	aannccaaga	antntggaaa	480
atggcncct	tggggaatct	agaccnaggg	nccttttttna	accttggaat	ngnttaaaaa	540
tcacnccaag	nttgactttt	ccttccttcg	anaaaatttg	gtcccn		587

<210> 121

<211> 570

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(570)

<223> n = A,T,C or G

<400> 121

gggtactcttg	gtttatcaat	gggacgttcc	agcaatccac	acaagagctc	tttatcccca	60
-------------	------------	------------	------------	------------	------------	----



acatcactgt	gaataatagc	ggatcctata	tgtgccaaagc	ccataaactca	gccactggcc	120
tcaataggac	cacagtcacg	atgatcacag	tctctggaag	tgctcctgtc	ctctcagctg	180
tggccaccgt	cggcatcacg	attggagtg	tggccaggg	ggctctgata	tagcagccct	240
ggtgtatttt	cgatatttca	ggaagactgg	cagattggac	cagaccctga	attcttctag	300
ctcctncaat	cccattttat	cccatggaac	cactaanaac	aaggctctgt	ctgcttctga	360
agncctatat	gctggagatg	gacaacttaa	tgaaanattt	aaanggggaa	aacccttaag	420
ccttgagggtg	tgtgnccact	tcanaggact	ttaaccttaa	ctttgagacc	aggtcaacct	480
ggnaanccct	tgggtggagaa	attggccgaa	cttcccnact	ttggccagg	ttttcccang	540
antgtcaaan	caagacttcc	ttatcatg				570

&lt;210&gt; 122

&lt;211&gt; 551

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (551)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 122

actatctcta	ttcaggatta	tgaagttttt	cgatgcgaag	attcactgga	tgaaagaaag	60
ataaaaagggg	tcattgagct	caggaagagc	ttactgtctg	ccttgagaac	ttatgaacca	120
tatggatccc	tggttcaaca	aatacgaatt	ctgctgctgg	gtccaattgg	agctgggaag	180
tccagctttt	tcaactcagt	gaggtctgtt	ttccaagggc	atgtaacgca	tcaggctttg	240
gtgggcacta	atacaactgg	gatatctgag	aagtatagga	catactctat	tagagacgg	300
aaagatggca	aatacctgcc	cgtttattct	gtgtgactca	ctggggctga	gtgagaaaga	360
aggcggnctg	tgcagggatg	acataattcta	tatctttgac	ggtaaccatt	cgtgatagat	420
nccagtttaa	ttcccatgga	atcaaatcaa	attaaatcat	catgactacc	ttggttcccc	480
atcggttgaa	gggacngnat	tcattggggg	ggcattggat	ttgatnnena	gnttttattca	540
atactttctc	n					551

&lt;210&gt; 123

&lt;211&gt; 575

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (575)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 123

acttaataca	tatttttcaaa	cctgttttgca	tttcaaaca	agtttagcg	tttgtaaatac	60
aaatttgata	acccgactaa	aaatattttc	cagctttatt	atttaaggag	ctgcacagcc	120
tttaaagtgg	ggaccaggag	gcaggcagag	gcagagagac	tgaatgcacc	caggactgcg	180
cagcagtcta	cagcaacatg	ttccacaact	ttggtgctgg	aaacacaagt	aatgcacaag	240
acagctgccc	tccagtgtca	ggatcctgtg	aaacagcata	tcaaaaagatc	gccagcttct	300
tataattttac	acactttcat	ttaggattgc	ttttttgaa	aaaaatcttt	aagaatgcca	360
tttttaattt	aatatccaga	accctggaat	ttaaaaaaac	ctaattngaaa	ggaaattaac	420
tggtagcatc	aaaaatgggg	ntgntgggtg	gancntgtgt	gaagttaggg	aattctatgg	480
ctttttttta	gatgccccgg	aaaattttaac	cccttaatng	cangtttaat	ttngaattcn	540
cncaggtan	tgtatgtng	gctcanatta	gtanc			575

<210> 124  
 <211> 570  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(570)  
 <223> n = A,T,C or G

<400> 124  
 actgagacaa tgggttagggg tgttttctta attcttttcc tggtagggca acaagaacca 60  
 ttccaatct agaggaaagc tccccagcat tgcttgctcc tgggcaaaca ttgctcttga 120  
 gttaagtga ctaattcccc tgggagacat acgcatcaac tgtggagggtc cgaggggatg 180  
 agaagggata cccaccacct ttcaaggggtc acaagctcac tctctgacaa gtcataatag 240  
 ggacactgct tetatccctc caatggagag attctggnaa cctttgaaca gcccagagct 300  
 tgcaanctag ccttacccaa aangactgga aangagacat atctntcaag cttttttcag 360  
 gaangcgtnc ctgggaatcc aaggaaacttt ttgatgctaa ttanaaangc ttgggactta 420  
 aaaatgtccn ctangngtg gcacttttac angtttttg aangcttnga aggcaganng 480  
 gggtcnaana ntnaaaanac nnttgacntg ntaatanngg aatantangg cnaatggaaa 540  
 ctgngttggg ggaggatcaa tttaaagagg 570

<210> 125  
 <211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(593)  
 <223> n = A,T,C or G

<400> 125  
 ggtacagaga tttaaagtga atcttcgaaa gaataaatgt gcttttccagt ccactgtatt 60  
 ttcaaaattg attatcacca agcttggtat aaagctgtga accacaaaacc atttgtttat 120  
 ttaatagaaa aaagaatgtg tagattatta gcaaagtaac gccttaaaat gtatcttcac 180  
 acagttgaaa ttttagtata aacttgata tcaagttgct ttccattatt tattctactt 240  
 taaaaatata tacaactatg atgttcaa atgtattctg agccattatg ttcaaacata 300  
 aatatctggg aaattcaaac tgctgcaaca agttaggaaa ggattaagga aaaatgatga 360  
 gctacaaatt atgtagtttg aggaagaaaa aaatgttact tagcatttat gtctggatag 420  
 gtatgtattt tctaatttac atacacatat ccagttgagt atagaccacc atcaaaatgt 480  
 accagttaca cagagactag actaaaccac cctatttcta tacagggtacc atagtggatt 540  
 caaaaattta atatctcata gttcccaaaa ttattgnggn aatatgctna ttt 593

<210> 126  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(592)

<223> n = A,T,C or G

<400> 126

acgcgggggg	gccttcggg	acgagggcgc	gtgggtgagg	aaggteaggt	ctaggaactc	60
taactccttg	ccactcaaga	aatgtectcc	ctttcagaat	atgccttcg	catgtctcgt	120
ctcagtgcgc	ggctatttgg	tgaagtcacc	aggcctacta	attccaagtc	tatgaaagtg	180
gtgaaactgt	ttagtgaact	gcccttggcc	aagaagaagg	agacttatga	ttggatatcca	240
aatcaccaca	cttacgctga	actcatgcag	acgctccgat	ttcttggact	ctacagagat	300
gagcatcagg	atthttatgga	tgagcaaaaa	cgactaaaga	agcttcgtgg	aaaggagaaa	360
ccaaagaaag	gagaagggaa	aagagcagca	aaaaggaaat	agtgttggtc	ccttcaagag	420
ggagactttc	ttcctaattg	ccggaaagaa	gaaagtgcac	ttattggctt	tccacatatt	480
ggaggaaatgt	catcttccta	aatgaagttt	atttgaggga	acaçagtcac	ttccttgggtg	540
aaactaatcc	ggtacattgn	ggttggggtt	ttgaacacac	ctactgggca	aa	592

<210> 127

<211> 600

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(600)

<223> n = A,T,C or G

<400> 127

acagtgggtcc	ttttcagagt	tggactttcta	gactcacctg	ttctcactcc	ctgtttttaat	60
tcaacccagc	catgcaatgc	caaataatag	aattgtctcc	taccagctga	acagggagga	120
gtctgtgcag	tttctgacac	ttgttgttga	acatggctaa	atacaatggg	tatcgctgag	180
actaagttgt	agaaattaac	aaatgtgctg	cttgggttaa	atggctacac	tcatctgact	240
cattctttat	tctattttag	ttggtttgta	tcttgccctaa	gggtgcgtagt	ccaactcttg	300
gtattaccct	cctaatagtc	atactagtag	tcatactccc	tggtgtagtg	tattctctaa	360
aaagctttta	atgtctgcat	tgcancagc	catcaaatag	tgaatgggct	ctcttttggc	420
ntggaattcc	aaaacntcag	agaaatgggtg	tcatcaagga	gaaccttcac	aaccccntga	480
anggattaaa	aagcccccac	tgggggggaa	tgataatagc	acttaaggct	ttaagaattg	540
gncacanttt	caccttgtga	acccatttna	cnatngngcc	taanngctnc	ctnctncaan	600

<210> 128

<211> 588

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(588)

<223> n = A,T,C or G

<400> 128

gggtacttttt	tttttttttt	tttttttttt	ttttttttgag	acggagtctc	actctgtcac	60
ccaggetgga	gtgcagtggc	atgatcttgg	ctcactgcaa	gctctgcctc	ctgggttcac	120
gccattctcc	tgccctcagc	tcttgagtag	ctgggactac	aggcgteccg	caccacgccc	180
agctaatttt	ttgtattttt	ggtananaca	gggtttcacc	gngttagcca	ggatggntct	240
catctectga	cctcgtgac	tgcccacctn	ggccttccaa	agtgtctggga	ttacaggeat	300
gagccacggc	gcctggccag	gatggtatat	ttttaactcc	ttcactgggc	cccaccctg	360

acttttctgct	ttangaggctc	tggggtgagg	ctgaanatct	gggggccaca	cttcgagagc	420
aaccaagact	gtaagtgggg	ccttccanag	cccaatgaag	ggaatactta	ggtacaggan	480
gtgtctgcat	ggncncangt	gtggggtttn	cttctcggcc	ttaaccagaa	agtatctctg	540
gttttaattt	taaaatgaaa	attttaaagg	gtgnctgaaa	cnaattgg		588

&lt;210&gt; 129

&lt;211&gt; 588

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (588)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 129

ggtactgccc	tctccagatc	agcagttcag	gagagcacag	gaggcaaaac	acagattgct	60
gggcttattg	gtgccatcat	cgtgctgatg	gtcgttctag	ccattggatt	tctcctggcg	120
cctctacaaa	agtcctgctc	ggcagcttta	gcattgggaa	acttaaaggg	aatgctgatg	180
cagtttgctg	aaataggcag	attgtggcga	aaggacaaat	atgattgttt	aatttggtatc	240
atgaccttca	tcttcacat	tgtcctggga	ctcgggttag	gcctggcagc	tagtgtggca	300
tttcaactgc	taaccatcgt	gttcaggacc	caatttccaa	aatgcagcac	gctggctaata	360
attggaagaa	ccaacatcta	taagaataaaa	aaagattatt	atgatatgta	tgagccagaa	420
ggagtgaaaa	ttttcagatg	tccatctcct	atctactttg	caaacattgg	tttcttttagg	480
cggaaacttat	cgatgctgnt	ggcttttagtc	ccttcgaatt	tacgcaagcg	cacaaacttt	540
gaggaaaatc	cgaaactgcn	aagcaagntt	gntacaagtg	acccaaan		588

&lt;210&gt; 130

&lt;211&gt; 190

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 130

ggtacaaaaa	aaaccttaca	taaattaaga	atgaatacat	ttacaggcgt	aaatgcaaac	60
cgcttccaat	tcaaagcaag	taacagccca	cggtgttctg	gccaaagaca	tcagctaaga	120
aaggaaactg	ggtcctacgg	cttggacttt	ccaaccctga	cagaccgcga	agaccccgcg	180
tacttttttt						190

&lt;210&gt; 131

&lt;211&gt; 386

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 131

ggtacagaac	tcagaggaaa	aaagaaatta	aatttttagct	ttctggagag	cagccctctt	60
ctggcaccat	caaacacttc	tttgtttccc	ttcaacttgg	aactcttcaa	acatcagggg	120
ttgtgagggg	ttggccattc	ttttatcttg	ggtccatgtg	agtgcagaaa	atgggtgcggc	180
ctgggaaaga	tctccctcct	ttacattttc	tcttctccct	cctcctcctt	attctaaaac	240
tgtgcctcca	acagaggggc	aggggctctt	gtagagagat	ccctggccca	ggacaggaga	300
tgccaaatct	aatttatctc	actgagggcc	tttgagaaaa	acgcttcagg	gccagggtca	360
gtggctcatg	cctatataat	cccagt				386

&lt;210&gt; 132

<211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(593)  
 <223> n = A,T,C or G

<400> 132  
 actgagacaa tgggttagggg tgttttctta attcttttcc tggtagggga acaagaacca 60  
 ttccaatct agaggaaagc tccccagcat tgcttgctcc tgggcaaaca ttgctcttga 120  
 gttaagtgc ctaattcccc tgggagacat acgcatcaac tgtggagggt cgaggggatg 180  
 agaagggata cccaccacct ttcaagggtc acaagctcac tctctgacaa gtcagaatag 240  
 ggacactgct tctatccctc caatggagag attctggcaa cctttgaaca gccagagct 300  
 tgcaacctag cctcacccaa gaagactgga aagagacata tctctcagct ttttcaggag 360  
 gcgtgcctgg gaatccagga actttttgat gctaattaga aggcctggac taaaaatgtc 420  
 actatngggg gcaactctaca gtttttgaaa tgctaggang cagaagggga aaaataaaaa 480  
 acatgacctg gttgaaggaa naaaagcaaa gaaacttggg ngggaggaca attaaaaaga 540  
 gnnctggga tccccnttc ttaggtccct ctcttacnaa ggacnctntt tat 593

<210> 133  
 <211> 588  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(588)  
 <223> n = A,T,C or G

<400> 133  
 acagancatt nnnagcnctn gcacaggnta cagaacctna cagacccaaa ggaacatcgg 60  
 ataggcnaag cgactacagg aggcgtgtgt gcgcttgggc naggtaaaca gggtcagtat 120  
 tggtcnngtg acaagagnca cgaantctgg ccngacantg angtnaanaa ggttnatnnt 180  
 ttnacantta tnnnanatat nnnnnaannt attaanctgc ancanntgat ttnacacct 240  
 anttactaga aaactaanga aagcactnat tagctctgaa tnaantnaca tggnaagcct 300  
 tttactaatc tncaanaaaa ccttctctgc antatnnnaa agattttatn atacaangng 360  
 gnnnatcnct cnatcatann gggttctatt ananaaccct gctaantntg cgacttacag 420  
 aacanccagc ntananatga ntttcatgcc catttgggaa gcatngcccc ggtatcacia 480  
 aggaaacctt ctaaagnttt ctgttatacc agccttcntt cntatcantg catgngnana 540  
 nanaaccntt gaaggttntc cnggggactt tnttctnttn ctttgccc 588

<210> 134  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(618)  
 <223> n = A,T,C or G

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<400> 134
tcnagcggcc nncnnggcag gtacantcac annttnnang anctnaacac anactanctg      60
nngtcaaata ttnaacaaaa gcantagatg aanctgctta acattcacgg aaaaacaacc      120
aaaagaaggg aggggtgata aaccanaaaa atgantgacn aaaactaaga gacctcatan      180
gngtctttac aatcnggaat tcagatgcaa ggaacagacn caaanctgtc taaaatgtna      240
cctatgaggg nacanaaaagt gacttaaagt ctggtntnan taaaaaatga caacccttat      300
cctagagagt cttacnttat ttaatccana cnttatntaa cgccncngat ttttgnttgg      360
ngctatggng ttnattttnt atcagaanga antgtgggac anatgcatta ctgnttggtt      420
aaagngcttn acagctaatt cacncccnng ggcatgggtca aaaaggnaaa aaccnggnca      480
tatattgntg anatgaaaaa accacntgtt aaaaaaataa ntgnagccna ntgngttttn      540
natgataacc aaatnttnac nttcagtann ngccttttan aagttggtga actccgaaat      600
ctnctttttt aaaccngg                                     618

```

<210> 135

<211> 374

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (374)

<223> n = A,T,C or G

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<400> 135
actttttttt tttttttttt tttttttttt gggatggagt ctccactctgt tgtccaggtt      60
ggagtgcagt ggtgtgatct cggctcactg caacctntgc ctcccaagtg attctcctgg      120
ctcancctcc tgagttagctg ggactacagc catgcccggc taatttttgt      180
atttttagta nanacagggg ttcaccatgt tggccaggct ggtcttgatc tcctaattctc      240
aggtgatccg cctgcctcan cctcctaaag tgctgggatt acaggcatga gccactgtgt      300
ntggccaana ncaactcgtaa gaaggatggc agtatcacia aatcaagcca gagatacaga      360
gattaccgcg gtcc                                     374

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<210> 136

<211> 581

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (581)

<223> n = A,T,C or G

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<400> 136
actccagcct tgctgaagct gcctcaaagg ctgatgggtt ggcagttatt ggtgttttga      60
tgaagggttg tgaggccaac ccaaagctgc agaaagtact tgatgccctc caagcaatta      120
aaaccaaggg caaacgagcc ccattcacia attttgacct ctctactctc cttccttcat      180
ccctggattt ctggacctac cctggctctc tgactcatcc tcctctttat gagagtgtaa      240
cttggatcat ctgtaaggag agcatcagtg tcagctcaga gcagctggca caattccgca      300
gccttctatc aaatgttgaa ggtgataacg ctgtcccatc gcagcacaaac aaccgccaac      360
ccaacctctg aagggcagaa caagtggagc cttcattttg atgattctga gaagaaaactt      420
gtnccttctc agaacacaac cctgcttctg acataatnca ataaaataat aatttttaaaa      480
aataaattat ttcaatatta ncaagacaca tgccttnaat natctgtaa ctaaaaacta      540
aaatttantc tactgnttaa tcnaanataa taatagcttc a                                     581

```

<210> 137  
 <211> 504  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(504)  
 <223> n = A,T,C or G

<400> 137  
 ttttncaaan nnaagttttt tacttccnaa aantnatggc taaggggngg gnggngggng 60  
 aaaaaagnaa aacaaaaaaa ccccaaaaaa atggggnggn naaaaggggg gganaaaaaa 120  
 ccnntntttt ntaaantntn acaaggcaag ngcnnangga aaaaaaaaaa ncctgnaaaa 180  
 tccccncgg nnggggnaaa natnnnggtt tccttttgnt ttnaaacccn ntngangnaag 240  
 gntntcccc ntncctctna atnaaaaatt tntntnccng ggccnaaacc nccntanggg 300  
 naaattccac cncnctgggg gccgttanta agggatccna gctngggcca ancttgngga 360  
 aacatggcaa aactgttcct nnggnaaaat gtctccctc anaattccca naaaataaaa 420  
 ccggaacata aagngaaaac cngggggcct aagngggncn cacnccattt attgggggtg 480  
 ccncgncctt tttcaaangg aaac 504

<210> 138  
 <211> 386  
 <212> DNA  
 <213> Homo sapiens

<400> 138  
 acaacaaata acactgtgac tccaacctca caacctgtgc gaaagtctac ctttgatgca 60  
 gccagtttca ttggaggaat tgcctgggc ttgggtgtgc aggctgtaat tttctttctt 120  
 tataaattct gcaaatctaa agaacgaaat taccacactc tgtaaacaga cccattgaat 180  
 taataaggac tgggtgattca tttgtgtaac tcaactgaagc caaaatacta tcttttaaga 240  
 tgtcccacat ggaagacgt attccaggat ctttaaattt ccatggatgc atataggatg 300  
 tttgggagca tcatccgtga agaaaaaatc aattaaatca ttgtgttcaa caggaatatt 360  
 taaaataaaa aaaaaaaaaa agtacc 386

<210> 139  
 <211> 586  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(586)  
 <223> n = A,T,C or G

<400> 139  
 ggtactcaag tttataatgt ccccaaacct taagactaga aaatcatccc aagaaaaagg 60  
 cctatagttg gttaatttc accctgagaa tactgtgata aaaatcaata tatttcagag 120  
 ctagtaagta tttaaaaatt agtgtctcaa aaaggggaca tcataaggga aatacaggg 180  
 ttagaggtct gagtcaagt ggtgtaagac agttctttct tcttctctct ttaaaactctt 240  
 cactttgctc taacacggaa gatgggggac agtgatcccg aaggtattac taaaatattg 300  
 cagctttcag taattatgag aagcacagat atcaccagaa aagaaagcaa tcatttgag 360

tactaagaaa	cgaacaatg	ttatttggtg	gtgtataatt	ctacttttct	agtagattac	420
tgngtggaat	tctgtgaaaa	atatttgaga	aaangcctgt	attgcataaa	taaattctttg	480
tatggtgcaa	aaaaaaaaaa	aaaaaaaaag	acctgccggc	cgncccaang	gcgaattcca	540
cacctgcggc	cgtctagnng	tcaccccggt	ccacttgggg	atatgg		586

&lt;210&gt; 140

&lt;211&gt; 591

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(591)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 140

acagggagga	atttgaagta	gatagaaacc	gacctggatt	actccggtct	gaactcagat	60
cacgtaggac	tttaatcggt	gaacaaacga	acctttaata	gcggctgcac	catcgggatg	120
tcctgnacc	aaccttcaag	gccnaaaccc	nnntggtggn	tttggncntn	aaatnaggat	180
ggccctgtnt	tcctaggtga	acttggtccg	ttggtcaagt	tattggatca	attgagtata	240
gtagttcgct	ttgactgggt	aagtcttnac	cnngtccntt	tnngtggggg	tttttttagg	300
naaaagnctt	ttggtncatt	nnntgggggg	gnaggggact	gaacctttat	tnnttccaaa	360
tncaccttaa	antcaggggac	aanaaacatt	ccaanaacca	caatctttta	aaaaattaac	420
tngccagtgg	gaatgtttta	aaanntnaan	ggtctttttt	gccttggttt	ttgtgggggt	480
ctctcttccc	ccccctgggg	ttaatttttn	aagccgggac	ctcncnaana	cccctttttt	540
caaagggccc	naaaccccc	ccccnaaaa	aaaaaaaaaa	aaaaaaaaanc	n	591

&lt;210&gt; 141

&lt;211&gt; 592

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(592)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 141

ggtacacaaa	ccaagacaat	atcaggggtga	caggtgaatg	aacttaaatt	ctcagttcttg	60
tctattcacc	aaaaaagtat	actgcctggt	ttttctttta	ttattcaagg	ttgatgactt	120
ttaggaacat	gttttatact	gtatttttta	attaaagcaa	gtgccttgat	gtaattccat	180
gtaaatacatt	gcttaaccct	cttatgggat	gaggatgagt	tattaatgta	ttgcagccta	240
ctggaaagga	ggggggagttg	gttaatagca	gatacttttc	ttctagaagc	ttatgtttta	300
tgctgtttat	tatgtaagat	cctgtatgtg	tggtgagatt	tagaggtttc	atttgttttg	360
tctgctaata	aattgttact	ctaataataa	ccnngnnaaa	naaanntnnn	nnnnnnnnnn	420
nnnannnggt	ncctgcccng	gcggccgctc	gaaagggcga	attccancca	ctggcnggcg	480
gtactaaggg	gatccgnctc	gggncccaac	ttggcgtaat	atnggcatac	tggttcccgg	540
gngaaatggt	atncgtcaaa	ttccccaaat	acnaccggaa	ncttaagggt	aa	592

&lt;210&gt; 142

&lt;211&gt; 595

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens



<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 142  
 acaacacctt cattcttaat gcttcttagg gcatacacagg ttttagaaat taatgtatatt 60  
 ttagcattcc acagtaatga tcactttcaa aaactgcaat atacatctgc atgttacact 120  
 gacatacaac acataagtat ttgtgcacac atcaactttt agcctcaaat aatagaatac 180  
 aaaaagctac actggacata acaccaccga acttttgaat atcccccttt cccaattggt 240  
 aacaggtagt actgggatta caggcgtgag cctctgcgcc tggccaagtg gaggttatta 300  
 ttaaccctat ttaacagata taaaaagaag agattagaga attttatcaa tgttccact 360  
 gtcaaataga atataagcaa tgatacaaaa tgttgagtct tcatcctcta actccagatc 420  
 ctggtatatt gccctacatt tctatacatt aatactaact tatacactga atacaagagt 480  
 naaaccaact gtcnnggctt aatangnga aaatgctctt gncctaaanc accaggggtgg 540  
 ctnggtttat tcctacatgt ggactaaaaa gnaatcatct ttatggcngg aaana 595

<210> 143  
 <211> 620  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(620)  
 <223> n = A,T,C or G

<400> 143  
 actactcgat tgtcaacgtc aaggagtcgc aggtcgccctg gttctaggaa taatggggga 60  
 agtatgtagg agttgaagat tagtccgccg tagtcggtgt actcgtgtga agttggcagg 120  
 gacggttcct gtcactcttct tgggcttatt tgggtgtgctg ttgaaggggg gagactagag 180  
 aaatggcagg gaacctctta tccggggcag gtaggcgcct gtgggactgg gtgcctctgg 240  
 cgtgcagaag cttctctctt ggtgtgccta gattgatcgg tataaggctc actctccgc 300  
 ccccaaaagt ggttgatcgt tggaaacgaaa aaagggccat gttcggagt tatgacaaca 360  
 tcgggatcct gggaaacttt gaaaagcacc ccaaagaact gatcangggg cccatagtct 420  
 tcgaggntgg aaangaatg aattgcaacg ttgtattccn aaagaagaaa atggttggaa 480  
 gtaaaatgtt ccttatgacc tcncaacct ataaacncat ccgtttnttt acaacntta 540  
 accacatggg aagttcattn aaaaaaactg aaaactttgn aaagnttttt ttnnccttga 600  
 aaaggggaact tacctcgccc 620

<210> 144  
 <211> 613  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(613)  
 <223> n = A,T,C or G

<400> 144  
 cgaggtagt tttttttttt tttttttttt ggggtcagtg gtgatatccc cctaataat 60

tctgattgng	ttccttttaa	tcttctctca	tttctttttt	attagactag	atagtgattt	120
atctatttta	ttaatttttt	caaaaaatca	cctcctanat	ttgttggttt	ttaaggggtt	180
ttatgtctct	atctccttca	gttcaactct	gatcttggnt	atctcttgnc	ttctgctaga	240
tttgggggtt	gntttctgnt	ggntctctaa	gttctttttg	ntgngacatt	agattgncaa	300
cttaaaatct	ttctagctat	ttgacgtggg	cattttaatgc	tataaatttc	ctggtaacac	360
tgctttcgt	gtatnccana	naatctggga	tggtagggcc	ttggtttcaa	taanttccaa	420
tacctcttaa	gggggnggag	ccaanaagan	ctaatagggg	cagcactgct	ctgggctncc	480
atcaanaagg	acaaaaactg	ggagngaccc	tgcttnttca	ctgaggnacc	ggcccggccg	540
gccgtccnaa	ggcgaatcca	cncnctggcg	gccgtctatg	gatccaccg	gnccaactgg	600
ggaatatggc	aaa					613

&lt;210&gt; 145

&lt;211&gt; 345

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 145

acactgatct	acaaaaatct	taaaatgagc	cgggcgcggt	gactcacgcc	tgtaatccca	60
gcactttggg	aggccaaagc	aggcggatca	tgaggctcagg	agatcaagac	catcctggct	120
aacacggtga	aaccccgct	ctactaaaaa	tacaaaaaat	tagccgggtg	tggtggcggg	180
cacctgtagt	cccagctact	cgggaggctg	aggcaggaga	atggcgtgaa	gccgggaggt	240
ggagcttgca	gtgagccgag	atcacaccac	tgcactccag	cctgggcaac	aaagcaagac	300
tctcaaaaaa	gaaaaaaatt	ttttttttaa	tgagctgggt	gtacc		345

&lt;210&gt; 146

&lt;211&gt; 475

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(475)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 146

actacaaggt	ttagcatttg	ctctgctggg	cgacattccc	ccagtctatg	ggttgatatgc	60
atcctttttc	ccagccataa	tctacctttt	cttcggcact	tccagacaca	tatccgtggg	120
tccgtttccg	attctgagta	tgatgggtgg	actagcagtt	tcaggagcag	tttcaaaagc	180
agtcccagat	cgcaatgcaa	ctactttggg	attgcctaac	aactcgaata	attcttcact	240
actggatgac	gagagggtga	gggtggcggc	ggcggcatca	gtcacagtgc	tttctggaat	300
catccagttg	gcttttggga	ttctgcggt	tggatttgta	gtgatatacc	tgtctgagtt	360
cctcatcagt	ggcttcacta	ctgctgctgc	tgncatgttt	tggtttccca	actcaaatc	420
atttttcaat	tgacagtccc	gtcacacact	gatccagttt	caatttttaa	agacc	475

&lt;210&gt; 147

&lt;211&gt; 629

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(629)

&lt;223&gt; n = A,T,C or G

```

<400> 147
cgaggtacgc gggatttgaa tcttaaactg tattttttctc ttagtattgc taatgagtaa      60
agaaaagtct cataaggtag ccaaatagaaa aagaatgaaa gggaaagtga aaaattaagg      120
ggacaaaaga tgggatgtga aaagaagaat tctagtttga tggtgactca tattcacgat      180
aggatacaaa gtgtgatttg ttggaaacat gtcccaaatt tctaaaattc tgcttctctg      240
ccaaaagcaa tgtctttctt ggttgatatt tgagttttta aaggggtcaa tctttctaat      300
tttttgtatc tttagagggc agcactagaa gaaatcagca ggtctaatac caccagtaag      360
aaaactacca cttcttgatt tttacagatt taaaaaaatc ttttcagtgc ctttcttttt      420
aatgtaaata caaattttaa cctangctta atatagcgtt tccctttccc caagtgatgt      480
cnaggtcgat gccaaatcaa tgatccnaaa tgatcgnngt naaaataact caaaggggtc      540
ttaaggngag tngcatgcca aaaaatacct tgattccggg gggttggacc tggctttgtt      600
ggggcctntg aaatgccaan ttanccan
629

```

```

<210> 148
<211> 614
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(614)
<223> n = A,T,C or G

```

```

<400> 148
acaaaagagc ctgattcttt ttaattccac aaatacctag catctcaaag taacatgtaa      60
acaaacttct atgctgctca atgaatcctt ccaatttcga taataaacta aatagtattg      120
gatctagtat atgactttca tgtgtaagtt atggttctat ccattacttt aacaatatta      180
ctgatgtaac agagaaaaat tttcaactat tgtattttatt taaaacaaac tgacaagttc      240
aagcacctgt cttcagaaaa gccagcagca tttttttttt ttaacatact caaagtaaga      300
tttggcctaa gcccttaata cttttctgaa cagccatgca actaaacacc ctcagggaga      360
tgttacataa gggagagaag aacatggagc aatttgcact ttttccttag ataataattaa      420
caaggnaaag caaatncaga tctttatgaa tgaatggntg gcatgggtta tcacttggac      480
tttttaact agagncncta tcatattggt aaatagaaan aaaggatttt aataaagctc      540
tnctgcttc aaaattaagg ggaenttttc tgggaggctt tcagggaacca taataaggta      600
aaaggggacg gttg
614

```

```

<210> 149
<211> 628
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(628)
<223> n = A,T,C or G

```

```

<400> 149
nccgaggnac ttttnttttt tttttttttt ttttnaacag cgncttttca tttttattac      60
tcaaaaaagt ttcatttttt tatttaagct ttctgactct gngcttgggc cttcaacact      120
ttcacaacga ttttctgctc ctcgataagg aaagcccgtt tgatcctana aaggaaaata      180
ccaaattaat catttcttta aaatgaactt cattttttat ttagcccaaa aaaggnaaac      240
atggtaaaga accaagcnaa gcaatcaggg aaccagaggaa actacnggat acccaaatac      300

```

```

ngagtaaaac ttaaaagggg aaattcattt aaagcagggg aatccctcaa tttcatgccn 360
gtagttatct gncctcctct gagcaagaat aactatgaag catccccag gagaccacnt 420
atgagactta attattggta ggatccagga atagnngnat ttnttgattt gcaaaaangtn 480
taaaaaattt taaccctntt ttgaaaattc ccagnaaaaa caccncataa ggggctntgt 540
gttaaaacta aaattaaagg gaagggtttt tccagaaacc ccccccacac cagggtttna 600
accgggttang gcanntcncc aaaccnan
628

```

<210> 150  
 <211> 509  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(509)  
 <223> n = A,T,C or G

```

<400> 150
ttggggaann aaaaaaaaaac tttttttttt nggggnnnngg ggntgcnanc natncaaaaa 60
tcaaaancnt ntttgggttt taactttttt ttttttgntt gncaaaannaa aantaaantt 120
tntttttana tttgctaang ggcngancn gcnnaaaaaa nccttttttn ggggaanctt 180
nggggcaaatt tmttnancn accctttggg anaacttttn ttaggggggn nnnaaccgnc 240
atttttggcc acttttttcc cttttgntta anggggncct tgggcnggac cnccttagg 300
ggnaattcac ccnctggggg gcgttatntt ggatccactc ggnccaaactt gggggaaaaa 360
gggaaaaacnt tttctggggg aaattttttc ccncnaaatt cccaanaana aaaccggaac 420
nnaaanttaa acccgggggc ccaaggnggg ccnnccntt nttgggtggg ccctgcccnt 480
ttaangggaa attttggccc tttttaaaa
509

```

<210> 151  
 <211> 622  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(622)  
 <223> n = A,T,C or G

```

<400> 151
ggtacttttt tttttttttt ttttttttgc tttggacaaa tttattgaaa catacaggcg 60
gctgtagca gagaaatcat tccatgattg atgtgttaca tttggccact accttgaatg 120
tataatttaa aaatttatatt tttcacaact aagccttttg ccaaaaaagt catttagcac 180
atctttaaag atcaataaga aatggatttt ggacattaaa aagatcaagt cactgaatta 240
aacagtagca accccatta atctagaatc ccatagtgtc gaaggtagag gtgtctgtgc 300
aaagctagtc atttgttaac agcaatcana aaanatgggg gcaggcacac ctgtcaaaag 360
tggaacana nctggcagga caggacggct gggctgtgtc ggtcaggtga gcatgtacca 420
aaaacagcag caacagaaaa cccgtccacc angcttgtga agcangtgga tggctcctagc 480
tcactnttn ttttggncct ntancacata cactgngggg ttangangnt tctgaggnc 540
accttgcnc cctacctgcc cgggngggcg ttnaaagggg aattccacca ctgggggccc 600
tctaattgga cccacctggg cc
622

```

<210> 152  
 <211> 313

<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(313)  
<223> n = A,T,C or G

<400> 152						
acggtggatt	agttcttttc	agcatgttcc	ttctgtatga	tacccagaaa	gtaatcaagc	60
gtgcagaagt	atcaccaatg	tatggagttc	aaaaatatga	tcccatatac	tcgatgctga	120
gtatctacat	ggatacatta	aatatattta	tgcgagttgc	aactatgctg	gcaactggag	180
gcaacagaaa	gaaatgaagt	gactcagctt	ctggcttctc	tgctacatca	aatatcttgt	240
ttaatggggc	agatatgcat	taaatagttt	gtacgcgggg	aaaaaaaaan	aaaaaaaaaa	300
aaaaaaaaag	acc					313

<210> 153  
<211> 620  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(620)  
<223> n = A,T,C or G

<400> 153						
cgaggtagc	gggagggcaa	caagaaccat	ttccaatcta	gaggaaagct	ccccagcatt	60
gcttgctcct	gggcaaacat	tgctcttgag	ttaagtgacc	taattcccct	gggagacata	120
cgcatcaact	gtggagggtcc	gaggggatga	gaagggatac	ccaccacctt	tcaaggggtca	180
caagctcact	ctctgacaag	tcagaatagg	gacactgctt	ctatccctcc	aatggagaga	240
ttctggcaac	ctttgaacag	cccagagctt	gcaacctagc	ctcacccaag	aagactggaa	300
agagacatat	ctctcagctt	tttcaggagg	cgtgcctggg	aatccaggaa	ctttttgatg	360
ctaattagaa	ggcctggact	aaaaatgtcc	actatggggt	gcactctaca	gtttttgaaa	420
tgctaggagg	caaaaagggc	agagagtaaa	aaacatgacc	tggtagaagg	aanaaagcaa	480
aggaaaactg	tggggaggat	caattagaga	ngaggccctg	ggatccnct	nttctaggn	540
ccctctcata	cnaaggacac	tttttatatg	ccttcccaaa	ctgntnggga	agggtnaaac	600
caaaatccgg	ggtanaacct					620

<210> 154  
<211> 339  
<212> DNA  
<213> Homo sapiens

<400> 154						
ggtacctgga	ggatatagac	ctgaaaacac	tggagaagga	accaaggact	ttcaaagcaa	60
aggagctatg	ggaaaaaaat	ggagctgtga	ttatggccgt	gcggaggcca	ggctgtttcc	120
tctgtcgaga	ggaagctgcg	gatctgtcct	ccctgaaaag	catgttgga	cagctgggcc	180
gtccccctct	atgcagtggg	aaaggagcac	atcaggactg	aagtgaagga	ttccagcct	240
tattttcaaag	gagaaatctt	ctggatgaaa	agaaaaagtt	ctatggtcca	caaaggcgga	300
agatgatggt	tatgggattt	atccgtctgg	gagtgtgggt			339

<210> 155

<211> 450  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(450)  
 <223> n = A,T,C or G

<400> 155  
 cgagggtactt tttttttttt tttttttttt tttttcntat ttttgtttaa tttattttaa 60  
 accacctnct tacaacttnc anagagaaaa tacaaaacaa gaaacanact tggtttnaaa 120  
 tgcataacca gntgctggan tttaaagcat tactgataac attgttacan aanaatggca 180  
 nnttactcna gggcacttna gtattcctna ggaataaaca ttgatttctc ttgtcctccc 240  
 nntgggatgt tctcangtna agtcactgcn cctgcncctta gacatatttt ccatgtnnca 300  
 naananggag cctgnaaant atgctnacag tnggaataag ccattnctaa ttccatgcca 360  
 naaccnangg ctaatggunc attctttttt aataagggtat gtggaaaana ttcntatccc 420  
 aaanaaaant tgcccggncg gtcntntntaa 450

<210> 156  
 <211> 760  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(760)  
 <223> n = A,T,C or G

<400> 156  
 cgagggtactg cccagtgaa aatggaactg aaagagcctg tagctgtcag agaaaggacc 60  
 acctttcagc actgatcggt tatcgttgct ctcaaaattt acatggaagg aatgcccac 120  
 attgataatt tctttggctg tggctgggtt gtaggagaca ctaatagggt tcagagagggt 180  
 gtcattgtttg gtttactggt ttttaatatc aacaggggac tggttatttc cattggcaat 240  
 gggatacagc ttgtctcatt gtccaggacc atttttgtca tcatatcccc agtctggact 300  
 tgccattatc ttctactgag ttttcttttt ctgaaaacaa aaataatacc tggataaact 360  
 aactgcccc gcgtcctgcc cgggcggcca aaggggcaat tccaccactg gcggccgtac 420  
 ttatggatcc aactcgtccc ancttggcgt aatatggcat aactgttctg nggnaaatgt 480  
 atcccttaca attccncac atcnaccga acctaantgt aancctnggn gcnnataagg 540  
 actactnctt aatgggtggc tctgncnttt caannngaac cttngcncn gntatgattg 600  
 ccaccccgga naggggtggt ttggccttcc ntcttgtann aatcttcncg gnttggtgga 660  
 anggtnttct taggggatng ttccaatggg gaccgnaanc ttccagccna ggcacccaan 720  
 cnttggttta nccccacnn aaaantanag gggncngggt 760

<210> 157  
 <211> 668  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(668)  
 <223> n = A,T,C or G

```

<400> 157
ggtacccagt agtcattcag gaacagggtt ttcagtttcc atgtagttga gcggttttga      60
gtgagtttct taaacctgag ttgtcgtttg attgcactgt ggtctgagag acagtttggt      120
ataatttctg ttctttttaca ttgtctgagg agtgctttac ttccacctat gtggtcaatt      180
ttggaataag tgagatgtgg tgctaaaaag aatatatatt ctgttgattt gaggtggaga      240
gttctgtaga tgtctattag gtctgcttgg tgcanagctg agtcaattcc tggatatacct      300
tggtaacttt ctgcttggtg ntctgtctaa tattgacagt ggggctgtaa agtctcccat      360
attattgtgt gggagtctaa tctctttgta ggtctctaag gacttgcttt ataaactggg      420
tgctcttgat tgggtgcaat atatttagga tagtttagctc ttcttggtga atggancctt      480
taccaatata aatggcctcc ttcttttga ccttggtgggt taaagctggt tatngaaact      540
ggatggancc ctgctttttt tggttcattt cttgnagggt cctcagcctt attttancnn      600
gnggctttgn ccncntccg cggcnttaag ggaaccacnc tngcgtcta ngancactgg      660
caactggg

```

```

<210> 158
<211> 737
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(737)
<223> n = A,T,C or G

```

```

<400> 158
tttttttaag ggtcaatggt tacatTTTTT tcatataaat atcaagttgt cagcaccatc      60
tggtgaaaaa aatcttttga atggctaata ttttatgtca ttagatttga taatagttta      120
agaatttttg ttctatatatt catgagggtt gctttccttt aacttttttg ttttgtaatg      180
tctgtgtcag gntttactat tagaacaata ctagtctagt aaaaaaaaaa anaaacaaaa      240
aactancaag tgtntctccc cttctattta taanaanggn gttacttctt cttaaatgg      300
nnaaattatg agngaaactt ggagtatcnt tgcnggantg gaagtttctt tgtggaaaag      360
attttatnat nattacattt caatagtncc gentccctgc ncgggcggnn ntcaaaggcg      420
aatncagcaa attgntggcc gntactnngg accaactnct gnccatnntg gggnancang      480
tcaanctggt ctngnnaatt gtnccttccc aatncccaca nanaaccgaa cctaaatgga      540
accnnggggc tantaangnc taccnntatt gngnggctnn gcccttnnnt ggaaactgnt      600
cnaccnttat aatggccccc cnggaaggnt tntttggcct tctnntncaa anctggcngg      660
nttntgtgna gggtatctna ntggatgttc cacgggaacn gaanatntan ncagtggacn      720
aaanntnntn ttttntct

```

```

<210> 159
<211> 739
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(739)
<223> n = A,T,C or G

```

```

<400> 159
cgaggggtaca ctgtgagaga ataacatgga cttgatatgg catcacactt gtttttaaagc      60
aaaaaaaaag aaaaaaagaa aaaaaagaaa gtacagttaa aaagtaagca ttgtagtaaa      120

```

tagtggattc	tctgggtgtgt	atttttttatc	tcagtggtga	aaattggaaa	agaatgggct	180
gaagtctaaa	aactggaata	atgaaggaca	ctaaatgcct	ttattgtaga	tactatgttt	240
gtaagtctat	agctaagcaa	cttaagccaa	aaaggtcttt	caactgaagc	tttaatcaac	300
ttattttgga	gatgttctct	tccttatctc	atgcgtcac	cctaaaataa	taagatacat	360
gggatcaaat	aacccttgcc	ttttcaacac	aatcagttg	gaaaattatg	gggttgagtcc	420
tggtgctgcc	atggttctgt	tctcaaaatg	agtgtgtatg	acatcccac	tatgtaatag	480
gctacctttt	tggtctcttg	aactttgtcc	tgccggccgg	ccnttaaggc	nantcnacca	540
ctggcgccg	tactatgggn	tccagctcgt	ccaaccttgc	tatcntggct	acttttctgg	600
ngaattgtatc	cgtnccatccc	cacttcancg	gagctaangg	aancntgggc	ctatggggct	660
actccatattg	ctngccnctg	cnttcnangg	aacnccgntc	ttaanatgca	cccnggaagg	720
gtngtngcct	tcnttcttt					739

&lt;210&gt; 160

&lt;211&gt; 802

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(802)

&lt;223&gt; n = A,T,C or G

<400> 160						
cgaggtacag	cagagacctt	cctgcttttt	actggggact	ccagattttc	cccaaacttg	60
cttctgttga	gattttttccc	tcaccttgcc	tctcaggcac	aataaatata	gttataccac	120
taaaaaaaaa	aaaaaaaaaag	tacgcggggg	cccattgttt	ttgtaatctc	tgaggagaag	180
cagcagcaaa	catttgctag	tcagacaagt	gacaggggat	ggattccaaa	caccagtgtg	240
taaagctaaa	tgatggccac	ttcatgcctg	tattgggatt	tgccacctat	gcacctccag	300
aggttccgag	aagtaaagct	ttggagggtca	caaaattagc	aatagaagct	gggttccgcc	360
atatagattc	tgctcattta	tncaatatga	ggagcagggt	gactggccat	ncgaagcaag	420
aatgcagatg	gcagtgtgaa	gaaagaaaaca	tatttacctt	taaagcttgg	tcccttttna	480
tcgaccnaag	tggtccgaca	agcttggaag	attactngan	aaagctcaat	nggactatgt	540
gactcttttt	aataatttcc	anggnnttaa	accogtgagg	acttttcccc	cgntaaatgg	600
aaagtatttt	gcnannggac	ttgacttccc	ggngccntaa	gngaattcac	cactgggggg	660
gnttagggtc	cnnntggnc	anttggnaaa	ngggtaatnn	cntgnaatgt	tcctcatccc	720
aantngccgn	ataantaacc	gggcaaaagg	cccaaattgn	gccctccttn	nngaattnanc	780
cctntannna	ancggggggg	gg				802

&lt;210&gt; 161

&lt;211&gt; 214

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(214)

&lt;223&gt; n = A,T,C or G

<400> 161						
acttttnntt	tattcnttat	ttttgggacc	tgctctcact	gtccacccag	actggagtg	60
antggcacca	ttatagctna	ctgcagcctt	gacctnntgg	gctcaagtga	tcctnctgtc	120
tacaccccc	aagnatgntg	tgacattatg	cttgataat	acttgatatnt	tangtaaaga	180
cagggctctt	ccnatnnacc	nggnagatct	naaa			214



<210> 162  
 <211> 304  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(304)  
 <223> n = A,T,C or G

<400> 162  
 acttaggaat acaactatat acatatgatt ttatttttta gaccatatta tatttgggta 60  
 tctactaata ttttgtataa agcaattttt tgttccatta cgtgactttt tgttttattg 120  
 tataatgta ttaacacaca ataaagggta aagttgcttc cccaaaccac acttttaatc 180  
 aaaacctaga atcatctgca gtccttggtta aaaatgcagg tttctagaac cctctgaagt 240  
 tctgattaaa taaattttatt gcaaatacaaa naaaanaaaaa aaaaaaaaaa agnccccggg 300  
 gnta 304

<210> 163  
 <211> 461  
 <212> DNA  
 <213> Homo sapiens

<400> 163  
 actagagcca gtcactcctta acaaattctt tcacatttta tttctttcac atgtagtcac 60  
 cttcaaaaag gaaagatttg gaatttttag aaaggggcaa ctcttctttt tagcattctc 120  
 atcagaaaag cacaataatc gatggaatca tttccactgg gaagattgac cttttgtatt 180  
 tatttgtggg gtaaatattt aagcattcca gatgcttgca gcttcctgca tccaggagat 240  
 gctgtgttcc ccgtgatgca gctggaaccc aagctgcagc aggagatgca agtttcagga 300  
 tgttccccac tgagctggag gaatatctac agcagtgatg cttgaaattt tgtatgaatt 360  
 attttgtcgc ctaccctttt cctccaaaca aaaattagag gattatttaa tccttgggat 420  
 cttccccttt ttgagaaata aagtttttat caaaaaaaaaa a 461

<210> 164  
 <211> 345  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(345)  
 <223> n = A,T,C or G

<400> 164  
 tttttttgag acaaggtctt actctgtcac ccaggctgga gtgcagtggc atgatcttgg 60  
 ctactgcac cctctgcac ccaggttcaa gtgattctcc tgtctcagcc tcccttgtag 120  
 ctgggattac agccacttgc cactgcaacc ggctaatttt tgtattctta gttagatgg 180  
 gggtttacca tgttggccag gctgggtctt aactcctgac ctcaagtgat ccacctgcct 240  
 ccatgtccaa agtgctggga ttacaggcat gagccaccac cctggccta agtcattaat 300  
 ttaaaaaatg ttattagat gancgacctg ccgggcggcc gntaa 345

<210> 165

<211> 385  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(385)  
 <223> n = A,T,C or G

<400> 165  
 actgaaacag aaactntacc caattgcagt ccatatgttt tctgggatcc cggagttccc 60  
 tttcaacaat gtaaaatata nacttaggtc aaaagttccc atgtctgaga aaactcaagc 120  
 caaatcagtt ctcttccaaa gttgacagga tttatgtttt aaaaatagag atacagaatt 180  
 ctctttggaa agatctacca aattcctgta agaaacagtc tacccaaagt aggggaaagg 240  
 ctatatgana agttcaaggc acttctttaa aatatatctt aggttttagg gaaaggaaac 300  
 agacaagttt ccagaccgtt ggggtggaat gatgtagcag atcactgaga gggtacaagc 360  
 gccgacctng gccngacac gctan 385

<210> 166  
 <211> 745  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(745)  
 <223> n = A,T,C or G

<400> 166  
 tttttgacga tgtctctcaa caatacctga agttttctcat actcatcatc ccaagtctga 60  
 aaaacttcaa agcatgctac cataactttt tcaaattctt cataagcaac atgcatcaat 120  
 ttcttagtgc ccaatacttt gagtaattga gaactcaagt ctcttgaaat tgcctccacc 180  
 aaacgcagtg ccctctgaat aggatatttt gtgtttcgga tctttctcaa atcccgcgta 240  
 ctttgagaag ctgaggcggc agatcacttg aggccaggag ttcgagacca gtctcgtcaa 300  
 catggcgaaa ccctgctcta caaaaaaaaaa aaaaanaana aaattagcca gacatggngg 360  
 ccacatctg tagtcccagc tacttganan gctgaggcat gagaatagct tgacctggaa 420  
 nggcaaaggt ttantgancc caaactgngc ctggattcca atnnggngga ccagtgana 480  
 tttgtctcaa aaaaangaaa ggaaaaaaga gcccgncgga aggaaggatg gattgangga 540  
 aaattgtggc ctccnnnnna aggnccaang gccctnangt ttctttgaat agtttcctn 600  
 gccnttctta ngggcctnng cctttttttn nctggcgaa cctaggnatt cacatggggg 660  
 ttangaacnc gccnctggga naggaaagtn ctggaagnnc nntcccaat ancgntang 720  
 aacgggcngn ggannaattt tttnc 745

<210> 167  
 <211> 623  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(623)  
 <223> n = A,T,C or G

```

<400> 167
accagccact gcaaaaacat gccaaattgt aaagaccatc gaggctggga agaaactgca      60
tcaactaacg agcaaaaataa ccagctaaca tcataatgac aggatcaa atcacacgtaa      120
cactattaac ctgaaatgta aatggactaa attctccaat taaaagacac agactggcaa      180
attggataaa gagtcaagac ccatacagtgt gctgtattca ggagacccat ctcatgtgca      240
gagacataca taggctcaaa ataaaggaat ggaggaagat ctaccaagca aatggaaaac      300
aaaaaaaggc aagggttgca atcctagtct ctgataaaaac agatttttaa ccacaaagat      360
caaaagagac aaagaaggcc attacataat ggtaaaggga tcaattcaca agaagggcta      420
ctattctaaa tatatatgca cccaatacag gacccccaga ttcattgaagc aaatccttga      480
gattnccaaa ggattaactc cncncngtat tatggagact tncaccact ntnacctttc      540
ccgatcttgn cccaaagtac cnggtttccc gaattgactn gtttgn cann gggctattaa      600
tttngaattt cncccaaaaa aaa
623

```

```

<210> 168
<211> 703
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(703)
<223> n = A,T,C or G

```

```

<400> 168
ggtactccct gtttgctgca gaatgtcaga tattttggat gttgcataag agtcctattt      60
gccccagtta attcaacttt tgtctgcctg ttttgaggac tggctggctc tgttagaact      120
ctgtccaaaa agtgcattga atataacttg taaagcttcc cacaattgac aatatatatg      180
catgtgttta aaccaaattc agaaagctta aacaatagag ctgcataata gtatttatta      240
aagaatcaca actgtaaaaca tgagaataac ttaaggattc tagtttagtt ttttgtaatt      300
gcaaattata tttttgctgc tgatatatta gaataatttt taaatgtcat cttgaaatag      360
aaatatgtat ttttaagcact cagcgaagg taaatgagca cgttttaaat gtgtgtgtgc      420
taattttttc cataagaatt gtaaacattg actgaacaaa tacctatatg gattggtaat      480
gacttatgag caanctgctt ggccagacag ttacccaaac tttatatatn tnngaaggta      540
tacactgnga aatctctggc taancgaatg cntccagggg taannnggtn tggntggant      600
aaanaatgcc ctgcaaaaaa aaaaaaaaaa aagccttccg nggccttnaa nggaatcnnn      660
anggggnntnn ggccactggc cactggnaaa ngnaacgtct gga
703

```

```

<210> 169
<211> 609
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(609)
<223> n = A,T,C or G

```

```

<400> 169
acgtccatct tccagctgct tgccagcaaa gatcagtcct tgctgatcag gaggaattcc      60
ttccttatcc tggatcttgg cctttacatt ttctatcgta tccgagggtt caacctcgag      120
ggtgatggtc ttaccagtca gggctttcac gaagatttgc atcccacctc tgagacggag      180
caccaggtgc aggggtggact ctttctggat gttgtagtca gacagggtgc gtccatcttc      240
cagctgtttc ccagcaaaga tcaacctctg ctggtcagga gggatgcctt ccttgtcttg      300

```

gatcttttggc	ttgacattct	caatgggtgtc	actcggtctc	acttcgagag	tgatgggtctt	360
accaagtcag	ggctcttcacg	aagatctgca	tcccacctct	aagacggagc	accaggtgca	420
gggtggactc	tttctggatg	ttgtaatcag	acanggtgcg	ttcatctttc	actgnttcca	480
caaaaaacaa	cctctgctgg	canganggat	ccttccttnc	ttggactttg	cctgacattc	540
tnatggngta	ctccgctccc	ttcaaaggga	tgnccttacan	tcanggnctt	acnaaaattt	600
cntccnctt						609

&lt;210&gt; 170

&lt;211&gt; 617

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(617)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 170

acaaagaaca	tgtagctata	ggaaataata	gtgtaaataag	cagtatataa	actggcccat	60
gtaaaataca	aaaatattca	ctgaagtcag	gttttctata	aaacagtggt	tattagaggt	120
attttactat	gaatcaggca	tataatctga	atgtagaaac	ttttagaaat	attaacagca	180
ttcagtcagt	gccatgcact	tgtgcttcca	attatttttt	taaagctgct	ttgttttgac	240
tcatgtgaaa	tagttaaggc	ctacattctt	atacacatta	tccatcttac	aagggttaaca	300
atttttacact	aaaacacagt	ttaaattaaa	aacgattttg	aaaaattaca	tctatatatta	360
atccctaaga	agtgttttaa	gctggtaatg	cagctcgctg	tagctctaag	agaggggtta	420
gtcaggaatc	tgatcttgag	ccataaangg	tttcaggcta	aacaaagaac	aaattttaagt	480
gacagaaaat	attataattn	caatatactc	agtttttttg	tataaaatac	cctgctagca	540
tgccactggc	tatattgnng	gcataatata	aaatgncggg	gggggggatg	gancctccaa	600
gncaaanttt	ggaccca					617

&lt;210&gt; 171

&lt;211&gt; 621

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(621)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 171

acagtatggg	ggttgtaaat	tggcatggaa	atttaaagca	ggttcttggt	ggtgcacagc	60
acaaattagt	tatatatggg	gatggtagtt	ttttcatctt	cagttgtctc	tgatgcagct	120
tatacgaaat	aattgttggt	ctgttaactg	aataccactc	tgtaattgca	aaaaaaaaaa	180
aagttgcagc	tgtttttggt	acattctgaa	tgcttctaag	taaatacaat	tttttttatt	240
agtattgttg	tccttttcat	aggtctgaaa	tttttcttct	tgaggggaag	ctagtctttt	300
gcttttgccc	attttgaatc	acatgaatta	ttacagtggt	tatcctttca	tatagttagc	360
taataaaaaag	cttttgtcta	cacaccctgc	atatcataat	gggggttaaag	ttaagttgag	420
atagttttca	tccataactg	aacatccaaa	atcttgatca	gttaaaaaat	ttcacataac	480
ccacttacat	ttaccaactg	gaagaataat	caatctctca	agcatgggat	tattagaatc	540
aacantttga	aagctgtcct	tgaaggctaa	taaaaaagnt	tgtctaacct	ttcatgagg	600
cttntntnta	ctnccttaen	g				621

<210> 172  
 <211> 399  
 <212> DNA  
 <213> Homo sapiens

<400> 172  
 actcaaaatt acacatttgt ttaaataaat atccacacaa attctcagtt acatcaagta 60  
 gctggtttat atttagatta tctcaagtag gggggaataa ccatgtgtag gaattcatag 120  
 aaaaataaac aatcagctga agaggtctaa gaaaatgctg acttttaaaa tttcacttat 180  
 tttccttgaa gttttctacc cttcccatcg atgataaacc aagatcatgt aatggaaaat 240  
 ttcaaaccag ggctaaattc taaagtaaag cttcaattca agcccttccc ccaagagaat 300  
 taattttcct gattttctct tctctcacat ctaaggagaa catttttaggc agttaaat 360  
 cagaacttca aggtttcatc agggtcacct ttatgtacc 399

<210> 173  
 <211> 616  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(616)  
 <223> n = A,T,C or G

<400> 173  
 actttgtgga taagaaaatg gaggaacaca tctgatggag agtgggcatt tgacaacaat 60  
 ggaacaggta acctgcatgt aaaatcaaaa tataagtgtc tttttaagag ctgaaagctg 120  
 ctgctggtca ttcattaatg tgtcagacat ttaatcagga tgctggacct tcaaaataac 180  
 tgaaaaaaga accaagaaaa ggcgtttttg ttttcaacaa actttactaa ataaccctgg 240  
 aaaggcaatg aacgatctga caatttaagc tctaattgatt taaagctcag ctagaagaaa 300  
 gtgaggcatg acatatactg tcaacggagg gtgaaggagg canatttctg gaaatgcaat 360  
 gatcccacca tttgcttcaa ngagaaacct gcanacatat tttcangtct tgntaagtna 420  
 caactgtnta tttgtaatca atcatttngg aaaagtctgc tatgtaactt angncaactgt 480  
 gccccnacc accgatgaaa aggaaaaaacc cctgacacca ggaaaatcct tccatcctca 540  
 aanaaattaa gngaccaacn tttaaagaaa aaaaatnanc ccncctctnt ttacaaatnt 600  
 ttctntccaaa tnttcn 616

<210> 174  
 <211> 631  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(631)  
 <223> n = A,T,C or G

<400> 174  
 ggtacgcggg gacacgcacg ccgggcgtgc cagttttataa agggagagag caagcagcga 60  
 gtcttgaagc tctgtttggg gctttggatc catttccatc ggtccttaca gccgctcgtc 120  
 agactccagc agccaagatg gtgaagcaga tcgagagcaa gactgctttt caggaagcct 180  
 tggacgctgc aggtgataaa cttgtagtag ttgacttctc agccacgtgg tgtgggcctt 240  
 gcaaaatgat caagcctttc tttcattccc tctctgaaaa gtattccaac gtgatattcc 300

ttgaagtaga	tgtggatgac	tgtcaggatg	ttgcttcaaa	agtgtgaagt	caaatagcag	360
ccaacattcc	agttttttaa	gaaagggaca	aaaggtgggt	gaattttctg	gagccaataa	420
ggaaaagctt	gaagccacca	ttaatgaatt	aatctaatac	tgttttctga	aaacataacc	480
accattggct	attttaaact	tgtaattttt	ttaattttcc	aaaattttaa	tttgaanact	540
taaccccant	tgccatntgn	gtgacaataa	aacattatgc	taccntttt	aaaaaaaaaa	600
aaaaaaaaaa	agtctgccc	ggcggccctc	a			631

&lt;210&gt; 175

&lt;211&gt; 261

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 175

acgaacctac	agtttttaact	gtggatattg	ttacgtagcc	taaggctcct	gttttgcaca	60
gccaaattta	aaactgttgg	aatggatttt	tctttaactg	ccgtaattta	actttctggg	120
ttgcctttgt	ttttggcgtg	gctgacttac	atcatgtgtt	ggggaagggc	ctgcccagtt	180
gcactcaggt	gacatcctcc	agatagtgtg	gctgaggagg	cacctacact	cacctgcact	240
aacagagtgg	ccgtcctaac	c				261

&lt;210&gt; 176

&lt;211&gt; 616

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(616)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 176

cgaggtagtc	tgcttttttag	gagatgaggt	aagacatata	catagatggc	ttttactagc	60
caaggcaatg	taaatggact	aagattctca	tgtgacttga	ggttatctga	tgaatttatt	120
ctcttcaaaa	ccacctacct	ttagagggca	tgtttaacct	ctctctttat	ttaaggaggg	180
agagaaaaac	acatgtaacc	agaattcaga	gtgggttact	caacctaaag	gaacatacgg	240
agttctcttt	gggaaaacaa	caagactaca	gtgttcactt	cgcaccatga	agtggcactc	300
ctgttatggc	tgtcagagtc	ctctcacttc	ttatgaaagg	atgcatctga	ttctgaaatt	360
actgatatat	tcgatcagtt	anggatgttt	taaaaagtga	aaacaaatgc	cacacataca	420
ctttctagct	ttcttgaaat	cacccgacac	attccaaaaa	tagagaattc	cctattactt	480
ttagagaaat	ttccatatan	tcttggtnaa	gaanccagtt	gngcntattc	caatttcagg	540
gtcttggttt	ttgcccacaa	ccaagtgttt	ccntntttta	nggcttttca	tggccgattt	600
naaaccttnt	ttgttg					616

&lt;210&gt; 177

&lt;211&gt; 632

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(632)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 177

cgagggtacag	gtcagagtct	tcttttcttt	tctttttgag	atggagtcct	gctctgttgc	60
cagactggag	tgcagtggg	cgatctgggc	tcactgcaat	ctccacctcc	cgggttcaag	120
cgattctcct	gcctcagcct	cccagtaac	tgggactaca	ggtgtgcgcc	accaagccca	180
gctcattttt	gtatttttag	tanagatggg	gtttcacggg	gttggctagg	atggtctcga	240
tctctggtca	gaagtctttt	ctgtaaata	ccttggtaaa	gaagcaattt	tagactgtag	300
ctgttgcaaa	tgctttaagg	aagaagcaaa	acaactgtca	gtcttctctga	aatgaaaaaa	360
ctacaccagg	gctgctatat	caaagcaacc	ccaaccagca	cttcaatcat	gatgcccaca	420
gtggccccac	tgagaaacca	agaaaagtn	cagatacaaa	actgngatgc	tcttgctatg	480
gnaatattgc	nggcngtanc	caagttagaa	accaaacaag	cntanggcc	cgtnnttttt	540
tggcgtgatt	ttggcaanaa	aaaaaactgg	gngngtggtg	ngggttccca	ttgtaccccc	600
aaaaaacttn	gggatgggtt	aaagcccnn	gc			632

<210> 178  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 178						
actttntttt	tttttttttt	tttttttttg	ggatttagtt	tttatttcat	aatcataaac	60
ttaactctgc	aatccagcta	ggcatgggag	ggaacaagga	aaacatggaa	cccaaaggga	120
actgcagcga	gagcacaaa	attctaggat	actgcgagca	aatgggggtg	aggggtgctc	180
tcttgagcta	canaaggaat	gatctggtgg	ttaagataaa	aaacaagtca	aacttattcg	240
agttgtccac	agtcagcaat	ggtgatcttc	ttgctggtct	tgccattcct	ggacccaaa	300
cgctccatgg	cctccacaat	attcatgcct	tctttcactt	tgccaaacac	cacatgcttg	360
ccatccaacc	actcaatctt	ggcagtgcag	atgaaaaact	gggaaccatt	tgtgttgggt	420
ccaacatttg	ccatggacaa	aatccangac	ccgtatgctt	taagatgaaa	ttctcatttc	480
aaatttcttc	ccataaatgg	acttgccnca	tgccatnttg	ggtgtgaagt	nccnccttgc	540
ncataaccct	ggaatatttt	tgaacagaa	ccttttacca	atcntttttt	catgttaaaa	600
acnaaaattt	t					611

<210> 179  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 179						
acctcaattt	tatcatttta	gagtatttgt	tagaatagga	tctctccaaa	atcaaacagg	60
atcaatctgg	tcacgtctaa	tcctaagaca	aaacactatg	taaaattttc	ctgtatctaa	120
atgttgccct	ctaggtaaat	ctgtgatatt	ttagagactt	tcttttgtgg	aaaaggtaat	180
ctgataaatg	ggaagagatc	atcagacaag	ttcacaaata	accattattt	ctgcagaatt	240
cagttgaagt	tggttttttg	taaatgctta	ttgggaattt	ctaaagcact	gacttggaga	300
ggccaagagc	ctccatcaat	ccctgcttgg	atagccactc	ccgttactac	tgctagggtca	360
gggtctacag	atgtgttggg	atcctttcca	aagaactctt	gaatgacttg	acggatccga	420

```

ggaataccaa tggagccccc aactaaaacc acctcatcaa tctcagtctt ttncaggtgg      480
ncttcttcaa tctcctgaat gggacctcgg ccgcancacn ctanggcgaa ttccacacct      540
ggcgccgta ctaatggatc caactcgnac caacttgggg aacatggcta gtnttcnngg      600
ggaaatgttt c                                                    611

```

```

<210> 180
<211> 621
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(621)
<223> n = A,T,C or G

```

```

<400> 180
acccttaaac tggcaggaca tttttgaaat cacaaatttg cacataaaga atgtcacgaa      60
cagccatgta tccatataca gcaatcaaat aaggaactta tgacctaaag caaaggtaaa      120
ctttcttgaa acttaacatt ctataccaac taggcaacct ctgccaggga tgagagttgg      180
atTTTTcaaa aacctctaatt ttaatagtgc agcatttcgt ttccctgat ggcctgtgtt      240
tcacagcagt ttttaaaaaac tgcttgttca actatagctg cagcctatat cccagctatg      300
gaaaaaaaag taaatcttag ttcaattttt gccagttgtt tctgtattta aatttaaaaa      360
aaaacacact tccgctgggc aggttttagag gggtattatc aagtctgtgc ataactaaaa      420
gttcaaagca aattcaattt tgcttaangg aacattgnna aagnacaatt cttggnanta      480
catgcctcgt tgatccattt naancatana aaattcaccc ttgtgtactg gttcaagaaa      540
aaaaccgatt tgacagttaa acatnttaaa anccccaacc tntgaagttc aaccaaactg      600
ganttttgtt cctcgcccca c                                                    621

```

```

<210> 181
<211> 606
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(606)
<223> n = A,T,C or G

```

```

<400> 181
cgaggtacag accagagaca aagcaagaga agaagcagag actgtttggcc cgggccgaga      60
agaaggctgc tggcaaaggg gacgtcccaa cgaanagacc acctgtcctt cgagcaggag      120
ttaacaccgt caccaccttg gtggagaaca agaaagctca nctgggtgtg attgcacacg      180
acgtggatcc catcgagctg gttgtcttct tgcctgccct gtgtcgtaaa atgggggcc      240
cttactgcat tatcaangga aaggcaagac tgggacgtct agtccacaag gaagacctgc      300
accactgtcg ccttcacaca ggtgaactcg gaagacaaaag gcgctttggc taaactggtg      360
gaagctatca ggaccaatta caatgacnga tacnatgaga tccccctcct ggggtggcaa      420
tgtcctgggt ctaaactctg ggcttgatn gccaacttcn aaangcaaag cttaaaaact      480
tgcncctaac tngggtnaat gtactncccg gcggccgttg aanggcaatt caacacattg      540
cggccgtcta atggntcanc ttggnccaac ttgggnaana tggnaaannn ttcttgggna      600
atttnn                                                    606

```

```

<210> 182
<211> 610

```



```

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(610)
<223> n = A,T,C or G

<400> 182
ggtactcata aaaaaagtct taccaccaaaa ttgcaaacaa atacattaaa agattagaag      60
aggtgataga aagcaccaga cattaaacaa aataaaaaata ataaaaataaa ttcaactcaa      120
aaggtcccca ttcagcaaata actttgtaaa gtatggcctg tatgtaaata gtgctaaatc      180
aaggactttt tagcagaaaa ttgctcgggt cttttatcta aggccttgaat ttgtaaagtg      240
aaggcataaa agttaccaaa cattaaagtaa ctcttaaaat ggcacacagg ttttaaagct      300
attgggtttt ccttcctaac tctctgaatt tttcccatgg cctttgtaga tcaactatct      360
caaacgtatt ttacaccagc aactctcaac atacttgtct ttcagatatg tcatcagtca      420
tgtctaacag gccaatagcc aaataacnga tttaaaacaa tnccttaacta gctagcagga      480
cattactttg gatctgctta ctgcaactga ctatttgtta gcttaaaatc antttaatcc      540
tgatacagaa acctcatctg cncatacatt actttggcct tcaaccttta aaaataactta      600
atcccccgnc                                     610

<210> 183
<211> 608
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(608)
<223> n = A,T,C or G

<400> 183
cgaggacttt tttttttttt tttttttttt tttttatttt tttttttttt tttttttttt      60
tttttttggg agncagctnt ttaattaggn tcttaaaaca tttaaaacnc caatttgnga      120
ggataaattc cattcgctcan ancaaacnca aatcgaggt anccctggan ctgaggaata      180
nctttgattt ttggnaaaat ttgngagtcc acagctttnt gatcaatntt gcncctgctcc      240
gnaatctcat atttctnttt ttctgngnecg aaaatctcac ctccctggng tntgggcttc      300
cgcagcttnt tntttttgaa gtaagcatca ataaaangtt ttgggatttt tacattgctg      360
aaatccattt tgggtgaagg ggcaatgaca aatttntngn gtnttctttt taaaagaacc      420
tcattggggg ccnaaggnc cncccaaatt ataaaccctt tccccctgg tttangnaaa      480
ccccctttg ccctgngggg nccangagga taaanaaagg ccccggggaa gctggcccca      540
ntttttcccg ccgncgaagg gttttgccgg ctaaaanttt tngggcattt nnnnggnaat      600
tttggett                                     608

<210> 184
<211> 622
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(622)
<223> n = A,T,C or G

```

```

<400> 184
acagccctga tgcaaagttt cagagcatga ccagcaagtg gccagctgtg tgggtcaaga      60
tcagctccag ctgggtctgc ctctgtcttt acgtctggac ccttgtggct ccacttgtcc      120
tcaccagtgc ggacttcagc tgaacctctg agtgccaagg acaccactgg aactcacaaa      180
ggtctccttc accgaaaacc catatacctt ttaagtttgt ttcaactaaa atattaagtg      240
aatgctttgc aagtttgact gtatgcaggt ttatatcaag aagggtgagat tgaataatgc      300
ttgatgcaga atcgaaactt ctcatcttct tgnatattat gtttacttct aaggatatag      360
cacaaagggg acattttttg tttaaagtga actacagctg tgctgtgaag agagtctctt      420
ataaagcctg taggtctttt aactttgggt aaaatgtaag ataggaaaat gttggatatt      480
tgaggcntgc ctaatatatt tatattggag natccttttna aagccaaaaa aaaaaaaaaa      540
aaaaaaaaag nccttggccg gaccncccta aggggaattc cacncaactg gggccgtntt      600
atggatccaa ctctgnacca ct                                     622

```

```

<210> 185
<211> 614
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(614)
<223> n = A,T,C or G

```

```

<400> 185
acgcgggggac agtcccaccc tcacacgatt ctttaccttt cacttcatct tgccttcat      60
tattgcagcc ctacgagcac tccacctcct attcttgca c gaaacgggat caaacaaccc      120
cctaggaatc acctcccatt ccgataaaat caccttcac ccttactaca caatcaaaga      180
cgccctcggc ttactttctt tctttctctc cttaatgaca ttaacactat tctcaccaga      240
cctcctaggg gaccagaca attataccct agccaacccc ttaaacaccc cccccacat      300
caagcccga t gatatttcc tattcgccct cacaattctt cgatccgtcc taacaaacta      360
agaggcgctc ttgccttatt actatccatc ctcatcctag caataatccc atccttcata      420
tatcccaaca acaaagcata atatttcgnc cactaagcca atactttatt gattctagcc      480
ggagacctct nantntaacc tggatcgag gaaaccagta gctacccttt accaatantg      540
ganaagaaga tcgnaccttg gcgggacacc ttanggggat tcaaccactg gnggcggtat      600
atgggacccn ccng                                     614

```

```

<210> 186
<211> 627
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(627)
<223> n = A,T,C or G

```

```

<400> 186
ggtactgatt ttaaaaaacta ataacttaaa actgccacac gcaaaaaaga aaaccaaagt      60
ggtccacaaa acattctcct ttccttctga aggttttacg atgcattgtt atcattaacc      120
agtcttttac tactaaactt aaatggccaa ttgaaacaaa cagttctgag accgttcttc      180
caccactgat taagagtggg gtggcaggtt ttagggataa cattcattta gccttctgag      240
ctttctgggc agacttggtg accttgccag ctccagcagc cttcttgtcc actgctttga      300

```

tgacacccac	cgcaactgtc	tgtctcatat	cacgaacagc	aaagcgaccc	aaaggnggat	360
agtctgagaa	gctctnaaca	cacatgggct	tgccaggaac	catatnaaca	atggcgagcat	420
caccagactt	naagaattta	agggcatctt	ccacttttta	ccaaaacngn	gaacaatctt	480
tttctttact	taacnaacnt	gcttccatgg	gagccgggng	naatccaatc	aagggcataa	540
cccgggcctt	atttggcnng	atgggtcang	gnaatanctt	gaccaggaaa	cccctgnttc	600
cttgggggga	antttgttgn	nccccac				627

<210> 187  
 <211> 256  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(256)  
 <223> n = A,T,C or G

ggaccttttt	tttttttttt	tttttttttt	ggaaaagaaa	ggccttacat	atttattact	60
gaatccagcc	aaccaacgtg	ttcataacag	attcagagag	gaaaacacgt	cgaaatctcc	120
anatagtgg	gacattttca	gcttgatag	gtaacatgat	cgtgaccttc	anacagcata	180
aatatgtgtg	ccatctcatg	tgcaattcct	tatanaccca	gcttggttct	tctccaatgt	240
ctccttttgg	agttgt					256

<210> 188  
 <211> 523  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(523)  
 <223> n = A,T,C or G

ggtaccacct	acacccaaca	agtcaatgag	ggacttcttt	ttaatttggt	aggattttga	60
ctggttttgc	aacaataggt	ctattattag	agtcacctat	gacaaaaaat	aggggttacc	120
tagataatgc	caaagtcagc	atttgtcctg	ggttccttg	tgtgatctgt	ttggactatg	180
ttttcttttc	ttctcccact	tgctcagcag	cttgggcttc	cattctagct	cttttaccaa	240
gatttttgtg	tgaccatggt	gacttcattt	ggattgccct	ctttcaattt	ccttgtgaaa	300
acacccttaa	ctttctcttt	acccttagct	gaaatgttta	cataacttct	ggtgatatct	360
tttcatgatt	ttatatctct	taaaatgggtg	atggatgtga	cacctcataa	aagtgtgctt	420
tgaactgtag	ataactctta	aagaaaatgt	cattttanac	aattaaaata	tttgtgctca	480
aaaaaaaaaa	aaaaaaaaaa	gtcctgcccg	gcggccgctn	aan		523

<210> 189  
 <211> 622  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(622)

<223> n = A,T,C or G

<400> 189

acaattttaat	ttttctgctt	gcccagaaga	caaagcttct	gtggaaccat	ggaagaagat	60
gaaaatgaga	ctggcaaaga	acaaatgctg	aatctgaaga	agaggacaac	tttgggcaaa	120
taatctgcat	acttttaatt	gggaataaga	tggaaaatat	gaatgctaaa	tcaaattttt	180
taaaaaatac	accacacgat	acaactcaat	acaggagtat	ttcttctcaa	attcttctag	240
caccatcaac	attcttcaag	tatctgaaat	actattaatt	aagcaccttt	gtattatgaa	300
caaaacaaaa	caaggacctc	agttcatctc	tgtctaggtc	agcacctaac	aatgtggatc	360
acactcatgg	gaaagtgttt	tgaggtagtt	taaacctttt	ggaagggttg	gttttaaact	420
tccctctgtg	gaagatatca	aaagccccaa	gtgggtgcaa	atgggttatg	ttttattttt	480
caattttaat	ttgggtttct	tccaaagggtg	acatttccat	acaaggggaa	gggggtggaa	540
aaaaaatcaa	attttggggg	accagggagg	ataatnaact	gtttgcaatg	cttgacaacc	600
tttttttttt	gnccaantaa	ca				622

<210> 190

<211> 628

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(628)

<223> n = A,T,C or G

<400> 190

accactaata	gggtgtatct	cagaaactga	attgaaataa	gggaaaatag	gattttctgt	60
cctgggtttt	gaagattggt	cttgattccc	ttgattccca	ggagagattc	tctgacattc	120
acgtgtcagc	cactttggca	cggaagcctt	acagtgtggg	gaacaaaaac	ttcgtgtctc	180
ctctttcccc	gatgccatca	gcatagactt	gacttcctta	aaccgagagt	tttgatgtgg	240
ccttggcaac	cctaaaatca	gctgtgttag	gtaacaaaac	tcaggctttc	tgttgatgac	300
atcgagatgg	tgtcacttaa	aagagccaag	attcctgttt	tcagtttggt	gattcatcct	360
gctgggttta	cttttagtccc	tccatgtcaa	agtgggcctg	agaaaagctc	atacatgcct	420
catgtgaagt	gtccaccccc	tctgaaaatc	tttcttggtc	aaaacancna	cgacatatct	480
tggttaacttt	tacggtgact	tttggangag	gggagtttgg	aaattgtaaa	atggtatana	540
tggtgcctat	ttcctgctga	angaaatgtt	ttaaaaagnn	tntntaancn	taatcnaatg	600
gttggggggg	gaccttctac	cnaanntn				628

<210> 191

<211> 474

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(474)

<223> n = A,T,C or G

<400> 191

ggtacagccc	tcaatctggt	cttcaagctc	aagaacttca	agacagctgc	cacctttgct	60
cggcgccctac	tagaactcgg	gcccagccct	gaggtggccc	aacagaccgg	aaaaatcctg	120
tctgcctgtg	agaagaatcc	cacagatgcc	taccagctca	attatgacat	gcacaacccc	180
tttgacattt	gtgctgcatc	atatcgcccc	atctaccgtg	gaaagccagt	agaaaagtgt	240

ccactcagtg	gggcctgcta	ttccccctgag	ttcaaaggctc	aaatctgcag	ggtcaccaca	300
gtgacagaga	ttggcaaaga	tgtgattggg	ttaaggatca	agtcctctgc	agtttcgcta	360
aagccccctt	tgtgtgcatg	gggtcaagtca	ccatatgttc	cccccaaaaa	atgtgtctat	420
atctccttct	aacaacacct	tccccctgcac	tactcttcaa	atctngctct	ntgt	474

&lt;210&gt; 192

&lt;211&gt; 234

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 192

acgcgggggt	tggtagtg	gctcctaccg	accgaggttt	aggcagcgcg	gggagctttg	60
cgggttgcca	tttgtaactc	cggatcctaa	aattcctgtc	ctgttctctg	tctcttctag	120
gttggggggc	gtcccgcctc	taaggcagga	agatgggtggc	cgcaaagaag	acgaaaaagt	180
cgctggagtc	gatcaactct	aggctccaac	tcgttatgaa	aagtgggaag	tacc	234

&lt;210&gt; 193

&lt;211&gt; 367

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 193

ggtaccaata	ccaccaat	ttgtagacatc	ctggagaggc	aggcgcaagg	gcttgtcagt	60
tggacgagtt	ggtggtagga	tgcagtcctag	agcctcaagc	agcgtgggtc	cactggcatt	120
gccatcctta	cgggtgactt	tccatccctt	gaaccaaggc	atgttagcac	ttggctccag	180
catgttgtca	ccattccaac	cagaaattgg	cacaaatgct	actgtgtcgg	ggttgtagcc	240
aattttctta	atgtaagtgc	tgacttcctt	aacaatttcc	tcatatctct	tctggctgta	300
gggtggctca	gtggaatcca	ttttgttaac	accgacaatt	agttgtttca	caccagtggt	360
cccgcgt						367

&lt;210&gt; 194

&lt;211&gt; 613

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(613)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 194

ggtactcttg	gtttgtcaat	gggactttcc	agcaatccac	ccaagagctc	tttatcccca	60
acatcactgt	gaataatagt	ggatcctata	cgtgccaaagc	ccataactca	gacactggcc	120
tcaataggac	cacagtcacg	acgatcacag	tctatgcaga	gccacccaaa	cccttcacatca	180
ccagcaacaa	ctccaacccc	gtggaggatg	aggatgctgt	agccttaacc	tgtgaacctg	240
agattcagaa	cacaacctac	ctgtgggtggg	taaataatca	gagcctccgg	tcagtcccag	300
gctgcagctg	tccaatgaca	acaggaccct	cactctactc	antgtcacaa	ggaatgatgt	360
aggaccctat	gagtgtggaa	tccanaacga	attaagtgtt	gccacagcga	cccagtcatt	420
ctgaatgtcc	tctatgncca	gacgaacccc	catttcccct	cataccctan	taccgtcaag	480
ggtgaacctt	agctttctgc	atgcagcttt	aaccactgcc	agtttcttgn	tgatgatgga	540
catcacacca	cacaagactn	ttatttcaca	tactgagaan	aaagcgactt	ntactgcagg	600
cataactanc	ngg					613

<210> 195  
 <211> 613  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(613)  
 <223> n = A,T,C or G

<400> 195  
 acgcggggcgc cagagtcctt gaactctcgc tttcttttta atccccctgca tcggatcacc 60  
 ggcgtgcccc accatgtcag acgcagccgt agacaccagc tccgaaatca ccaccaagga 120  
 cttaaaggag aagaaggtga tggtagaggaa gaggatggag atgaagatga ggaagctgag 180  
 tcagctacgg gcaagcgggc agctgaagat gatgaggatg acgatgtcga taccaagaag 240  
 cagaagaccg acgaggatga ctgacagca aaaaaggaaa agttaaacta aaaaaaaaaa 300  
 agggcgccgt gacctattca ccttcactt tccgtctnaa aatctaaacg tggtcacctt 360  
 caataaaaag gcccccgcc ccnngggcag tgccccccca aaataaacgc gctttacca 420  
 ccaaccaaac atgaaaattt tccacaaggg anggaaaaaa aaccaaactn ccaaggcctn 480  
 ttttttttta aaatactnng ccgcgaccac cctanggcga attccanacc tggcgccgt 540  
 nttatggatc cnactcggac caacttgggn aatatggcat antggttctt ggngaaatgt 600  
 atccctccat tcn 613

<210> 196  
 <211> 296  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(296)  
 <223> n = A,T,C or G

<400> 196  
 gcggnggcnn ggccgacggn ctcatcaatg ttgttcggtc agcccttccc taattacacc 60  
 tatecnctac acatacatgc acatagacac acnctgaac nactgaana tatttccttc 120  
 aggtgtgtgt aaaatatgct gcttggattg aaattcannt gggattgatt agncaagtan 180  
 cttganacct cacagtaatc ttcacacttn nccttacaca cctatgcagg catgttggga 240  
 gcangttaca atgttacttc agccacagt ttatttctat acttgagttc ttaagt 296

<210> 197  
 <211> 222  
 <212> DNA  
 <213> Homo sapiens

<400> 197  
 acatggagga gaatgaccag ctcaagaagg gagctgctgt tgacggaggc aagttggatg 60  
 tcgggaatgc tgaggtgaag ttggaggaag agaacaggag cctgaaggct gacctgcaga 120  
 agctaaagga cgagctggcc agcactaagc aaaaactaga gaaagctgaa aaccagggtc 180  
 tggccatgcg gaagcagtct gagggcctca ccaaggagta cc 222

<210> 198  
 <211> 539

<212> DNA  
<213> Homo sapiens

<400> 198  
 cgagggtacta catattttcag cactaaggcg gttgcttcac tttatatcta tataaaaaaa 60  
 gtggtaaaaa tcttttcctt ttgtgcagtt gaacccatcc tacattcaga ttctctcaag 120  
 cactaataaa atacttattt gggttgaggaa gatttaaggc aagttcgggc ccttccaaag 180  
 gcactgtgag actccccccc cactccccgt tattgtctaca tgtctttata ctcgagtatg 240  
 tcacagtaga actgggtggaa taagcaaaca cttttttgct agtttataaa gttggaatta 300  
 gaaaagcatg ccacatttca gcctgattgc aaagtatgtg gtcatttttt tctttgaagt 360  
 tggatgggct acaaccttta tacattctaa gaaaactcat aggatgttcc tcaaactact 420  
 tccacagcat caagatcgat ttctgtcaag aaatcatgca atctttcaaa atttacgtaa 480  
 acaaggaaaag aaattaatga aataaatatt acataacaatc tcttaaatta agaatttgt 539

<210> 199  
<211> 626  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(626)  
<223> n = A,T,C or G

<400> 199  
 cgagggtacaa gatgtccaaa tattgcgaag atctattttgg ggatctcctg ttgaaacaag 60  
 cacttgaatc acatccactt gaaccaggca gggctttgccc atcccccaat gacctcaaaa 120  
 gaaaaatact cataaaaaaac aagcggctga aacctgaagt tgaaaaaaa cagctggaag 180  
 ctttgagaag catgatggaa gctggagaat ctgcctcccc agcaaacatc ttagaggacg 240  
 ataatagaaga ggagatcgaa agtgctgacc aagaggagga agctcacccc gaattcaaatt 300  
 ttggaaatga actttctgct gatgacttgg gtcacaagga agctgttgca aatagcgtca 360  
 agaaggcttc agatgacctt gaacatgaaa acaacaaaaa gggcctgggc actgtagaag 420  
 atgagcaggc gtggatggca tcttataaat atgtaggtgc tccaactaata tccatncata 480  
 tttgtccaca atgatcaact acgcccacct gtaaagggtc aagggttncat gtggcagaag 540  
 aaccncatat tcattataca tggcttcttt tatgaatant cggccttggt tcttgaancc 600  
 cttgcaatga atttgnaatt ntacca 626

<210> 200  
<211> 618  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(618)  
<223> n = A,T,C or G

<400> 200  
 actcataaaa aaagtctttac cccaaaattg caaacaaata cattaaaaga ttagaagagg 60  
 tgacagaaag caccagacat taaacaaaat aaaaataata aaataaatcc aactcaaaag 120  
 gtccccattc agcaataact ttgtaaagta tggcctgtat gtaaatagtg ctaaatacaag 180  
 gacttttttag cagaaaattg ctcggttctt ttatctaagg cttgaatttg taaagtgaag 240  
 gcataaaaagt taccaaacat taagtaactc ttaaaatggc acacagggtt taaagctatt 300

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ggtttttctt  tcctaactct  ctgaattttt  cccatggcct  ttgtagatca  actatttcaa  360
acgtatttta  caccagcaac  tctcaacata  cttgtctttc  agatatgtca  tcagtcatgt  420
ctaacaggca  aatagcanaa  taacagattt  aaaacaatcc  ttaactant  agcaggacat  480
ttactttgga  ttctgcataa  ctgcaaactg  acatatttgt  aaagctaaaa  atcagtttaa  540
tcntgattac  agaaactcta  tcatgctcat  tacttaacta  ttgnccttca  atcgcatttn  600
aaattcactt  aatccaat  618

```

<210> 201

<211> 627

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (627)

<223> n = A,T,C or G

<400> 201

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ggctactaggc  acaatagaac  atacagaaaa  cattgtccct  gctcttgagg  agcttacatt  60
ctaaaagaaa  aaatacacct  tttttaaaat  ggcatttttg  tttgggtgtt  tctgcaaagt  120
acgcggggct  ttttcttttt  gaggaagacg  cggctcgtaag  ggctgaggat  ttttggtccg  180
cacgctcctg  ctctcgactc  accgctgttc  gctctcgccg  aggaacaagt  cggtcaggaa  240
gcccgcncgc  aacagccatg  gcttttaagg  ataccggaaa  aacaccctg  gagtcggagg  300
tggcaattca  ccgaattcga  atcacccctaa  caagccgcan  cgtaaaatcc  ttggaaaagg  360
tgtgtgctga  cttgataaga  ggcncanaag  aaaagaatct  canagtgaag  ggaccaagtt  420
ngaattgccta  ccaagacttt  gagaatnact  acgaganaaa  ctcttctgtg  tgaagggtcta  480
agacgtgggn  tngnttcag  atgagaattc  acaagcgact  tattgacttc  acaagtcctt  540
ntgagattgt  tangctgatt  acttccttna  ntatgancn  ngaatttaag  ngggangtna  600
ccntncagan  gnntagttna  ctatttt  627

```

<210> 202

<211> 620

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (620)

<223> n = A,T,C or G

<400> 202

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actgcttaac  gaaacactat  cagcttggtt  taaatggatc  ttttaaatat  caactgtagc  60
ctggttggct  aattctttct  aattcttccc  attactttcg  cctagatttc  ccatagatca  120
acaggcatag  taaaatgcct  catcagaaca  cacttctcca  cacaattcaa  aaaggagct  180
cctgtgggct  caaagcaacc  atcagtcag  caatgcccat  gatttatctg  aaactgcttc  240
ccaagagaca  ggagtgcaga  tctgagtagc  tgtgtgccca  atacagatag  gtttagcact  300
agatatattag  tgattgtggc  aaggaagaat  cggatgatga  ggggggtggg  ggtgaaggaa  360
gggccagggg  atctgaagga  tcttcagttg  ccttctcctg  cttcttcctc  ctgctggctg  420
ctcgccana  ggggtgaggt  gtctcgagc  aactgcata  tcagcgtgga  gtccttatag  480
gaatcctcgt  ttagtgtgtc  cagctcagct  atggcatcat  cgaaggcttg  tttggctaaa  540
agcangcttg  ctcanagtga  ttctggatct  catagtagaa  caccggagaa  ntganggcca  600
ggcccaaccg  gatnggatgc  620

```



<210> 203  
 <211> 577  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (577)  
 <223> n = A,T,C or G

<400> 203  
 ggtactttttt tttttttttt tttttttttt tttttttttt tttttttttt tgaaaaagtc 60  
 atggaggcca tgggggttggc ttgaaaccag ctttggggggg ttcgattcct tccttttttg 120  
 tctaaatttt atgtatacgg gttcttcnaa tgtgtggttag ggtggggggc atccatatag 180  
 tcaactccagg tttatggagg gttcttctac tattaggact tttcgcttcn aagcgaaggc 240  
 ttctcaaate atgaaaatta ttaataattac tgctgttaga naaatgaatg ancctacaga 300  
 tgataggatg tttcatgtgg ggtatgcacg ggggtantcc gagtaacgctc ggggcattcc 360  
 ggataggccn agaaagtgtt ntgggaanaa agttagattt accccgatga atatgatagt 420  
 gaaatggatt ttggcgtagg ttgggtctag ggtgtancct gagaataggg gaaatccgtg 480  
 aatgaaacct cctatgatgg caaatacact cctattgnta ggacataatg ngaagtgagc 540  
 tacaaccgta atacctgccc nggcnggccc ttannan 577

<210> 204  
 <211> 629  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (629)  
 <223> n = A,T,C or G

<400> 204  
 cgaggtactt gttttttttt ttttttttga gacggagtct cagtctgtca cccaggetag 60  
 agtgcagtg cagacatcg gctcactgca acctccgcct cccgggttca agtgattctc 120  
 ctgcctcaac ctcccagta gctgggacta caggcatgtg ccaccacgcc tgactaattt 180  
 ttgtattttt agtanagatg ggatttcatt atgttggcca gctgggtcttg aacttctgag 240  
 ctccagtgat ccaccgcct tagcctncca gagtgcagg ataacaggca tgagccgtcg 300  
 cgcttgacca aaatagcata atgttttaag aaagtttacg aatttgtctt gggccacatt 360  
 naaaaccatc atgggccaag ggttgacaaa gctagcctta ggtcatgtca gaatgcaatt 420  
 taacaggaat ttcaagcnaa acttacaaaa aattaaatcc acaaaaaaaaa tatcatttgg 480  
 taaatgcact gnctacacac ttactncta agtccattca accatgacga ccctttacat 540  
 aaaaattagg gcattctccc aagttctaaa gatgatttct aaaacattac caangnctaa 600  
 agtctaattc ccacaaanct ttttttttn 629

<210> 205  
 <211> 424  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (424)

<223> n = A,T,C or G

<400> 205

ggtacaaatg	cttttatatt	cagccccctgt	aaagccatca	gatgtttgaa	agttttttaa	60
cacgaaccaa	agggtttta	tttaagaact	tagctaggaa	tgggtgaaat	cctacccaat	120
taatagagtt	ctgcaaatta	gtaacaaaagt	gtaaaaatgaa	aggaagggtc	ccttggagat	180
gtgaaattct	tctattgaga	gtcctgtctt	ctttattcaa	gaagtgtgta	gccattttca	240
gaattcactc	aagaaccaac	ttcttaattt	agatatcagc	gaacaagtca	tggcaaaaaa	300
tacacaaaga	gaaacaccac	cacatcgaaa	aggatgaaaa	gccagagggtc	caaccagtan	360
gagtgtttgg	gaagcccatt	tgccccagac	tgaggcctca	catcgaagtt	ctgcctcccc	420
gcgt						424

<210> 206

<211> 633

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(633)

<223> n = A,T,C or G

<400> 206

ggtaccaatg	gtgcctcctg	gaatcaagta	tctttacctt	aggaataacc	agattgacca	60
tattgatgaa	aaggcccttg	agaatgtaac	tgatctgcag	tggctcattc	tagatcacia	120
ccttctagaa	aactccaaga	taaaagggag	agttttctct	aaattgaaac	aactgaagaa	180
gctgcatata	aaccacaaca	acctgacaga	gtctgtgggc	ccacttccca	aatctctgga	240
ggatctgcag	cttactcata	acaagatcac	aaagctgggc	tcttttgaag	gattggtaaa	300
cctgaccttc	atccatctcc	agcacaatcg	gctgaaagag	gatgctgttt	cagctgcttt	360
taaagggtctt	aaatcactcg	aataccttga	cttgagcttc	aatcagatag	ccagactgcc	420
ttctgggtctc	cctgtctctc	ttctaactct	ctacttagac	aacaataaga	tcagcaacat	480
ccctgatgaa	gtatttcaag	cgtttaaatgc	tttgagtagt	ctgcgtttat	ctcacaacga	540
actggctgat	agtggaaatac	ctggaaattc	tttcaatggn	gccatcctgg	gtgaacctgg	600
acttgccat	accagntaa	aacataccac	cgg			633

<210> 207

<211> 623

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(623)

<223> n = A,T,C or G

<400> 207

ggtacttttt	tttttttttt	tttttttttt	ttagaaacta	tggctcttta	ttttcatgtg	60
gataattcaa	acaaagtcat	tagtagtctt	tgttcaattt	tttttttaaa	aacaaaaaaa	120
ccctcaaata	aaaaatcttg	ggcttaaaag	aactctatca	caggagcctg	ggtggaggat	180
tcctagtttt	atacatgaga	aatagaatgc	agatttctct	gaagagtgtt	taaagaagga	240
atggtagttg	agggggctta	tttcccaggc	tcaaagtgat	ttaggggtgg	tgtcacagtg	300
ctaggtatag	ggtgatggac	agtgatcact	gccgagggcc	ttggaacgga	tcttgctgtc	360
acacaatgca	ggtaacagag	agtgggacaa	caaaaagtaa	tcaaggcgcc	aaccaacatt	420

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cttggatcga gcattcatat ataagtccaa aagggtgtang cataaggtgt gttgggggtan 480
aagtgcctaa agctgcaacc agtggcacan cctgcagtaa ttccccgaac cttgggccttt 540
tggggcgtga anccnccatt cttttgggtnc cctnggggtg cnaaggcaat ttttnatgtg 600
cccattgagg gttcaaacac aca 623

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<210> 208

<211> 620

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(620)

<223> n = A,T,C or G

<400> 208

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acgatgtcta gtgatgagtt tgctaataca atgccagtca ggccacctac ggtgaaaaga 60
aagatgaatc ctaggggtca gagcactgca gcagatcatt tcatattgct tccgtggagt 120
gtggcgagtc agctaaatac tttgacgccc gtggggatag cgatgattat ggtagcggag 180
gtgaaatatg ccccgcgtag ttgctttgaa agattaccta ctattttatg ataaaatgta 240
gttgtctcca gagcttaaat ataatttgta aagcacttgg tttaaatttc tctctaccta 300
taaacagttt agcattaagg gtttctatta atgacacaga attattggcc aagtgttaatt 360
tcttaaaatt tagcattact ttaaatagcc agcatgtaat acaagtaact acactacctc 420
atatctacat gattttcaag ttgtaatgca gatggacaga taaaaaagat ttacgttgnc 480
ttttggccat aagtgggaaa agttttctgn atattgcata gcattacaca tttatgccta 540
ttttacatta acttctaaag aagtttttct aagaaaangg ttcaggcaat attttttgag 600
gctgccgaan aaaaatgant 620

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<210> 209

<211> 624

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(624)

<223> n = A,T,C or G

<400> 209

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ggtactggta caaaaacagg cacataaacc aatgaaacag aatagaaagc ccagaaataa 60
tgcttcaccc ccacaaccat ctgatcttca acaaaataaa caaaaacgag ccattggggaa 120
aggactccct attcaataaa tgggtgctggg ataactagtt aaccatatgc agaagattaa 180
agctggaccc ctctcttaca aaataaggag ctggacccct tatacaaaaa tcaactcaag 240
atggattaaa gcctttaaag tgaaactata aaacctgga agacaacata ggcgattcca 300
ttctagacat cagaactggc aaagatttca tgaggaagac accaaaagca attgcaacaa 360
aagcaaaaat tgacaactgg gatataatta agtttaagag cttctgcaca gcaaaagaga 420
gactatcagc agagtaaaca gaccacctac agaattgggag aaaatatttg caaactatgc 480
atgtgacaaa ggtctaatat ctagcatcta taagtactta aacaaatttc aacagaaaac 540
caacacccca ttaaaaagtg ggcaaggaca tgaacaaatg cttttcaaaa gaagacatct 600
gcttntacag tttntgaaac aaag 624

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<210> 210

<211> 504

<212> DNA  
<213> Homo sapiens

<400> 210  
acgcggggca gctagcagat gcttttaggac ctagtatctg catgctgaag actcatgtag 60  
atattttgaa tgattttact ctggatgtga tgaaggagtt gataactctg gcaaaatgcc 120  
atgagttctt gatatttgaa gaccggaagt ttgcagatat aggaaacaca gtgaaaaagc 180  
agtatgaagg aggtatcttt aaaatagctt cctgggcaga tctagtaaag gctcacgtgg 240  
tgccaggctc aggagttgtg aaaggcctgc aagaagtggg cctgcctttg catcgggggg 300  
gcctccttat tgcggaaatg agctccaccg gctccctggc cactggggac tacactagag 360  
cagcgggttag aatggctgag gagcactctg aatttggtgt tggttttatt tctggctccc 420  
gagtaagcat gaaaccagaa tttcttcact tgactccagg agttcagttg gaagcaggag 480  
gagataatct tggccaacag tacc 504

<210> 211  
<211> 619  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(619)  
<223> n = A,T,C or G

<400> 211  
accatgaaat atccagaaca tacttatatg taaagtatta tttatttgaa tccacaaaaa 60  
acaacaaata atttttaaat ataaggattt tcctagatat tgcacgggag aatatacaaa 120  
tagcaaaatt gaggccaagg gccagagaa tatccgaact ttaatttcag gaattgaatg 180  
ggtttgctag aatgtgatat ttgaagcatc acataaaaat gatgggacaa taaattttgc 240  
cataaagtca aatttagctg gaaatcctgg atttttttct gttaaactct gcaaccctag 300  
tctgctagcc aggatccaca agtccttggt ccactgtgcc ttggttttct ctttatttct 360  
aagtggaaaa agtattagcc accatcttac ctacagtgta tggttgtgagg acatgtggaa 420  
gcactttaag ttttttcac ataacataaa ttattttcaa gtgtaactta ttaacctatt 480  
tattatttat gnattttatt aagcatcaaa tatttgtgca agaatttga aaaatagaag 540  
atgaatcatt gattgaatag tattaagatg tatagtaaat ttttatttt ananattaaa 600  
ngangtttat taganaaaan 619

<210> 212  
<211> 479  
<212> DNA  
<213> Homo sapiens

<400> 212  
cgaggtacaa agcagcaact gcaatactca aggttaaaac attagaaaag catttgtgtg 60  
acaggtatat tacagtatta tcaaaatatt acattttcag acttacttag cagataatca 120  
tccaccagag cttaaactct taaattattt ccatagctct aaaaaaatatg taatgtcaga 180  
atgcatataa aaagaatgta aaaggaaacc taaaatacaa atggaataat gtaacaaata 240  
aatatttgat ttcagtaact gttaataatc agctcaacac caccattctc tctaaactca 300  
atttaattct tataggaata atgaactgtc aaatgccatg gcataattat ttattttcaa 360  
gctatcatca atgattagaa ctaaaaaaat tttggcataa aaaaatcaca attcagcata 420  
aataaagcta tttttagctt caacactagc tagcatctct aagaattgtt gaaataagt 479

<210> 213

<211> 487  
 <212> DNA  
 <213> Homo sapiens

<400> 213  
 actgtttact gcctgggcac tatactttct atgcagatct cttttgtggg tttccagcct 60  
 gtcctttcat cagagcacat ggcagccttt ggggtctttg gtctctgcc gatccatgcc 120  
 tttgtggatt acctgcgcag caagttgaat ccacaacaat ttgaagttct tttccggagc 180  
 gtcctctctc tggtaggctt tgctcttctc accgtgggag ctctcctcat gctgacagga 240  
 aaaatatctc cctggacggg gcgtttctac tcaactgctg atccctctta tgctaagaac 300  
 aacatcccca tcattgcttc tgtgtctgag catcagccca caacctggc ctcatactat 360  
 tttgacctgc agctcctcgt cttcatgttt ccagttggcc tctattactg ctttagcaac 420  
 ctgtctgatg cccggatttt tatcatcatg tatgggtgta ccagcatgta cctcggccgc 480  
 gacacgc 487

<210> 214  
 <211> 393  
 <212> DNA  
 <213> Homo sapiens

<400> 214  
 cgaggtacaa tatgctgcag cataatttgt caggccaacc ttcacaccat attttggcag 60  
 ttctgtgtgca tacgtgcgc agactatcat atccccctct atacgggcat aagcaatctg 120  
 acaaatgata tctctgtttg tcacacgaac tatcatcctg tatttgggtg tgttgtattt 180  
 atttttatct tgtatcacca agcgtttccg agcataataa tcagttttac cctctcgtcg 240  
 tcttctaaat ttcacttggg atctcttaaa gtaggcctta ttcttaacaa ctttaacaaa 300  
 ccccatcctg cggaacagag accggcgctc gctgctcgac agagacctgc aggcccagcg 360  
 gcgctagggg gtgggaaaag ggcaccccc cgt 393

<210> 215  
 <211> 615  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(615)  
 <223> n = A,T,C or G

<400> 215  
 ggtacagtaa caagtgttgg cattatcagt tgaactgtaa atacaaaatg cttcttccaa 60  
 ttagtctcta tgatgattaa gtttctaaaa tttatctgaa caccattcag aaacttgttt 120  
 tggggaattt gatagttatt gatgtgcatc tgtaaactg atgacagaca taactcatca 180  
 ttccccagaa accttttttg attacagtat ctaacatttt gcctcctctt ttttggtttt 240  
 gctggttata aagggtttgga ttggagaggg ctcaactggat cccaatcctt ggagctggat 300  
 cattggattc aaatcataat gtggatagga tagggaggat gaattaccag gattcatgga 360  
 gcgggatcag attaccagga acataggagt ggattcctgc ccaaccacaa cgcattcgt 420  
 gtggattttt ttattcaact taattggcta ttccaaagat ttttttttcc tatttttgac 480  
 gaatggagcc cttaagatgc acgatggaat tgggtttgcg tttttggtaa aaggacaaa 540  
 ccaggcctgg agataacgct ggagcaatct cntggaagga ttagccccaa ttgatgggaa 600  
 catttaangg ggaag 615

<210> 216

<211> 322  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(322)  
 <223> n = A,T,C or G

<400> 216  
 ggtactttttt tttttttttt tttttttttt ttttttggag ttgtaggcaa atgtttaatt 60  
 aattctgctc atatgcacat ctgaaagcat gagacacact ccacagacag cacgcactgg 120  
 ggctgggtggg gcanatgggc actcgccgat taggtattaa tgtcaataat acgtgcataa 180  
 agtgctgata aaataactta agtgttacaa aaagagacag tccacggtgg ctgcaggcac 240  
 atgcaggcgg gactgggtca aacactccag ggctgcacat gttccagctg gcctgagtcc 300  
 gacacgtcat aactggcctt gt 322

<210> 217  
 <211> 606  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 217  
 acgcgggggg aagtgagcga cacactctgc gtctctgcct caccagagtc ttgctgtgtg 60  
 gccagggctg gagggtcccg ctgggtctcaa attcctgacc tcaagtgatc tccctcccaa 120  
 agtggttgca ttgcagggtg gagccactgc acctggctgc tgagaaatct ttgcctacag 180  
 tgagggaaaac tactaaagtt cctggggaag caaagtaaga atttcataag aacaaaatgg 240  
 atggagagga gaaaacctat ggtggctgtg aaggacctga tgccatgtat gtcaaattga 300  
 tatcatctga tggccatgaa tttattgtaa aaagagaaca tgcattaaca tcaggcacga 360  
 taaaagccat gttgagtggc ccaagtcaat ttgctganaa cgaaaccaat gaggncaatt 420  
 ttagagagat ccttcacatg tgctatcgaa agtattcatg natntttacgt accttggggc 480  
 gcgaccacct taaggccaat tncacacact ggcngggcgt actantggat ccnactngga 540  
 ccaacttggc gtaatcatgg catactgggt cctggggaaa atgtatccgt tacaattcnc 600  
 acacan 606

<210> 218  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(618)  
 <223> n = A,T,C or G

<400> 218  
 ggtactttttt tttttttttt ttttttttga gacggagttt ggcccttggt gccagggctg 60  
 aagtgaata gtgcgatctc ggctcactgc aacctccacc ttccgtgttc aaccgattct 120

cctgcctcag	cctcctgagt	agctgggatt	acagatgaaa	aaacatttaa	agcccttaag	180
gaagaaggaa	atcaatgtgt	aaatgacaaa	aactataaaag	acgccctcag	taaatacagc	240
gaatgcttaa	agattaacaa	taaggaatgt	gccatatata	caaacagagc	tctctgttac	300
ttgaagctgt	gccagtttga	agaagcaaa	caggactgtg	atcaggcact	tcagctagct	360
gatgggaacg	tgaagcctt	ctatagacga	actctggctc	ataaaggact	caagaattat	420
cagaaaagct	taattgatct	caataaagtt	atcctactag	atccaagtat	tattgaggca	480
aagatggaac	tggaagangt	aactagactc	ctaactctaa	ggataagaca	gcaccattca	540
acaaagaaaa	ggagagaagg	aaaatgagaa	tcaagaggng	aatgaaggca	ngaggancct	600
ggaaaacctg	aggggagg					618

&lt;210&gt; 219

&lt;211&gt; 613

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(613)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 219

ggtacaaagc	ggatctgagc	ccggaaaaatg	ctaagctcct	cagcacattc	ctaaatcaga	60
ctggcctaga	cgcttctctg	ctagagctgc	acgaaatgat	aatcttgaaa	ctaaagaacc	120
cccaaaccce	aaccgaggag	cgcttccgcc	ctcagtggag	cctgagagac	actctcgtaa	180
gttacatgca	aactaaagaa	agtgaatttc	ttcctgaaat	ggatatctcag	ttcccagaag	240
agatactgct	cgccagctgt	gtctcagtgt	ggaaaacagc	tgctgtgctg	aaatggaatc	300
gagaaatgag	atagaattat	ttcctcagct	atctttggat	gactttggag	agaagactcc	360
tctctcctcg	tctgcggcgt	ggacttgatc	atggactggg	gcctttgcat	tcagaaggag	420
agctgtcagc	gtagcaccga	attcaagacc	aaggcgtgct	acctgagctg	acagcttttt	480
gaaagccgag	ctgggttctga	accatgtcct	gcccnggcng	gcgctcgaaa	gggcgaattc	540
agccactggc	ggccgtacta	ntggatccga	actcggacca	aacttggcgt	aatatgggca	600
tactgggtcc	tgg					613

&lt;210&gt; 220

&lt;211&gt; 616

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(616)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 220

ggtacgcggg	ggcagccgcg	gtgttgtgtg	gtggggaagg	gagaaggatt	tgtaaacccc	60
ggagcgagg	tctgcttacc	cgaggccgct	gctgtgcgga	gacccccggg	tgaagccacc	120
gtcatcatgt	ctgaccagga	ggcaaaacct	tcaactgagg	acttggggga	taagaaggaa	180
ggtgaatata	ttaaactcaa	agtcatttga	caggatagca	gtgagattca	cttcaaagtg	240
aaaatgacaa	cacatctcaa	gaaactcaaa	gaatcatact	gtcaaagaca	gggtgttcca	300
atgaattcac	tcaggtttct	ctttgagggg	cagagaattg	ctgataatca	tactccaaaa	360
gaactgggaa	tggaggaaga	agatgtgatt	gaaagtttat	cangaacaaa	ccgggggtca	420
ttcaacagtt	tanatattct	ttttaatnnt	ttcttttncc	tcaatccttt	tttattttta	480
aaaatagtcc	ttttgtaatg	tgggtgtcaa	acggaattga	aaactggcac	cccatctttt	540

gaaacatctg gtaatttgaa tctaattgctc attatcatta tgggttggttt cattggcnga 600  
 attttgggga tcaanc 616

<210> 221  
 <211> 615  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(615)  
 <223> n = A,T,C or G

<400> 221  
 ggtacagtga tagtccccc tgggcaatac aatacaagaa cagtggggttt tgtcaaattg 60  
 gaacaaggaa acagaaccac agaaataaat acattgggtta acatcagatt agttcagggt 120  
 acttttttgt aaaagttaaa gtagagggga cttctgtatt atgctaactc aagtagactg 180  
 gaatctcctg tggtcttttt ttttttaatt ggttttaatt ttttttaatt ggatctatct 240  
 tcttccttaa catttcagtt ggagtatgta gcatttagca ccactggctc aatgcgctca 300  
 cctagggtgag agtgtgacca aatcttaaaag cattagtgtc attatcagtt accaccattt 360  
 ggggctttta tccttcattgg gttatgatgc tctcctgatg acacatttct ctgagttttg 420  
 taattccagc caaagagaga ccattcacta tttgatggct ggctgcatgc agacatttaa 480  
 agctttttaga gaatacacta caccagggag tatgactact antatgacta ttagganggt 540  
 aatacccgaga attggactcg caccttaggc aagatccaac cactaaattg aataagaatg 600  
 agtngatgag gtncc 615

<210> 222  
 <211> 617  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(617)  
 <223> n = A,T,C or G

<400> 222  
 ggtacttttt tttttttttt tttttttttt ttttaattta tgattttatt gnctttcctt 60  
 tgtccggcct ttaacatggt tctgtaattt aaataaaaat ctatttactt tctccatttt 120  
 agcaaattgg ttttttacct aaataggttg cactatagtc cccatatggt tttctactgn 180  
 tccacaacca ctatttcaca aagattgaca aaactttaat aaaagttaaa tttacagaca 240  
 tcttaagata acttgggaaa tatgtagtaa aaaagaatcg agtccacaaa ttaagaatat 300  
 tttgctaata tgcccacac caatttcagc aaatccaatc tacttaactc atatatttaa 360  
 tgnngtaatt tttctaacaa aatttaatgg gggatgaat gatataattt tgcccttgac 420  
 aaagatgaca tgtgtgattt tgggtngact aanaaaggag aagtatgatt tctggngggg 480  
 atganatcac tctggctcat cgaagctcca gaatatgtaa gggctctgna cgtccaaaaa 540  
 tgtaggcna atgtataaaa ggccacccgg ctnacacacg ttttatatac aaactttngn 600  
 agtcctttta tntcata 617

<210> 223  
 <211> 470  
 <212> DNA  
 <213> Homo sapiens



<220>  
 <221> misc\_feature  
 <222> (1)...(470)  
 <223> n = A,T,C or G

<400> 223  
 ggtaccacaa ctgtgccctt gataattagt aatcactcct aaaaatcttc atttggcacc 60  
 agatggtgtg tttaaaacac cctaggatgt tttgaatcag gcttgatttt gttagttgag 120  
 ttacaggaga attttaaggg tgagggtatg ggggtcaggg aagaaaagga aatgggaaat 180  
 ggaccagaaa aaatcttgag tcatcatcta aatcaacaaa gcactgatag ctccaaatat 240  
 taggtcagac actaaaacga ctgatatagg ctcaagtggg ttataaaacc tataaaaaga 300  
 ctacaccagc aaagtccctg tcaatctgtc agagttcaga aactaaaaca gggagtaaca 360  
 ttttagctta aaaccttate tcaagagaat catatacact tcacatgaat aaaaatacct 420  
 gaaaccaaac atttttataaa gctccagtcg tgcccnggcc ggccgctcga 470

<210> 224  
 <211> 622  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(622)  
 <223> n = A,T,C or G

<400> 224  
 gcgtggngcg ggccgacgtn ctcttttttt tttttttttt ttttttgcnn actaaaaatn 60  
 ngattgctct ttaaagcctt aggccgnatg acaaaatgan nagactgaaa tgacancggg 120  
 gaggaagaaa cagannaaag ataagaatga ggtgggtcagg ttgggggaat taagcgaata 180  
 ttcncttccn nggtgagtcg tnacactggg ctcatgccca tgatgagttg cacaccaaac 240  
 acnggctgnt gacttncctc cacctaaaaa atgctgcgct ttcgacnng ctcnnncagn 300  
 cattacagnt ataanntttc cacttaaaaa atgctgcgct ttcgacnng ctcnnncagn 360  
 ggccgggggt tgacatggng gaanggattt ctctcccatg ccaagggaatt catcacatca 420  
 ctgntactcc actgncaacc ttntccattg ggctcngtgc cctgtgtngg gtcattggacc 480  
 cantccanaa ntatgaatac tgtaccatgc tcttaaccag gaggacctaa ggatccttag 540  
 nccntgagn nanacaccag gnttcaaagg ccgttttggg aagccaaatt tgnttnggnc 600  
 cgaattnggg ccaaacangg tt 622

<210> 225  
 <211> 619  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(619)  
 <223> n = A,T,C or G

<400> 225  
 acgcgggggag ttccgccatg gcctccttgg aagtcagtcg tagtcctcgc aggtctcggc 60  
 gggagctgga agtgcgagcgc ccacgacaga acaaatattc ggtgctttta cctacctaca 120  
 acgagcgcgga gaacctgccg ctcatcgtgt ggctgctggt gaaaagcttc tccgagagtg 180

gaatcaacta	tgaaattata	atcatagatg	atggaagccc	agatggaaca	agggatgttg	240
ctgaacagtt	ggagaagatc	tatgggtcag	acagaattct	tctaagacca	cgagagaaaa	300
agttgggact	aggaactgca	tatattcatg	gaatgaaaca	tgccacagga	aactacatca	360
ttattatgga	tgctgatctc	tcacaccatc	caaaatttat	tcctgaattt	attagcccg	420
ggggccaatt	ttttaactca	natcttgctg	agaccaggag	catctgattt	aacaggaagt	480
ttcagattat	acccgaaaaa	gaagttctag	agaaattaat	agaaaaatgt	ggttctaaag	540
gctacgtctt	ncaaattggag	atgattgggc	nggcaagaca	ggtgaatatt	ctattggcga	600
ggttccatat	canttgngg					619

<210> 226  
 <211> 277  
 <212> DNA  
 <213> Homo sapiens

<400> 226	
acgcggggccc	cctcattttac ataaatatta tactagcatt taccatctca cttctaggaa 60
tactagtata	tcgtcacac ctcatatcct ccctactatg cctagaagga ataatactat 120
cgctgttcat	tatagctact ctcataaccc tcaacaccca ctccctctta gccaatattg 180
tgctattgc	catactagtc tttgccgct gcgaagcagc ggggggccta gccctactag 240
tctcaatctc	caacacatat ggctagact acgtacc 277

<210> 227  
 <211> 328  
 <212> DNA  
 <213> Homo sapiens

<400> 227	
ggtacatatt	tttgccaatg ctatacagca aaaatgaaaa acttacagaa aggtaaacaa 60
aattgagtc	acttttttaa ttccacaagc tgcttttaaac tatagaacca ccagatatct 120
gtaaaataag	caaaactggg aagtgtgttt tttaattga gggaaggagg gccagaggag 180
ttggtgcaga	agcgcttcgg gtgaattcat accagagcca ccgggtgtga ctcggtacc 240
tctcccaatt	accacagga ggtcttaaaa ttgaatttca gtttcagcag atactccaga 300
tttacctgag	caatatcata gacaatgt 328

<210> 228  
 <211> 609  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(609)  
 <223> n = A,T,C or G

<400> 228	
acgcgggagt	tcaagcagat gtatggctaa ccggaaacag gtgggtcacc tcctgcaaga 60
agtggggcct	cgagctgtca gtcacatggt tgctatcctc tgaacccctc agctgccact 120
gcaacagtgg	gcttaagggt gtctgagcag gagaggaaag ataagctctt cgtggtgcc 180
acgatgctca	ggtttggtta cccgggagtg ttcccagggt gccttagaaa gcaaagcttg 240
taactggcaa	gggatgatgt cagattcagc ccaagggtcc tcctctccta ccaagcagga 300
ggccaggaac	ttctttggac ttggaagggt tgcggggact ggccgaggcc cctgcaccct 360
gcgcacag	actgcttcat cgtcttggct gagaaaggga aaagacacac aagtcgctg 420
ggttgagaa	gccagancca ttccacctcc ctcccccaac atctctcana gatgtgaaa 480

cagatctcat ggcaacnaag ccctntgcaa gaagctcaag gaanctaagg aaaatggacg 540  
 ttttcagana atgggtgtag ttcattgggtt ttnccactg ccgggtcctt tcttangacc 600  
 cgcanaant 609

<210> 229  
 <211> 610  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(610)  
 <223> n = A,T,C or G

<400> 229  
 ggtacttttt tttttttttt tttttttttt gcagactaaa aattttattg ctctttaaag 60  
 ccttaggccg tatgacaaaa tgaagagact gaaatgacag cggggaggaa gaaacagaag 120  
 aaagataaga atgaggtggt caggttgggg gaattaagcg aatattctct tccagggtga 180  
 gtccctcacac tgggtctcatg cccatgatga gttgcacacc aaacacaggc tgctgacttc 240  
 cctcctgcac tagtcagtga acttgcagac atagggtaac ctcacattac agttataatc 300  
 tttccacctc agaaatgctg tgcttctcga caggctcgca cagtggccgg ggcttganat 360  
 ggtggaggga tttctctccc atgcaaagta attcatcaca tcactgntac tccactccca 420  
 accttctcca ttgggctcgg tgccctgtgt ggggtcatgg acccaatcca acgtatgant 480  
 actggtacca atgctnttac caggaggagac acnaaaggat cccttaccac ctgagcacag 540  
 acccnaggtt tcaaanggcc gttttggcag gccaaactgn atntgnccag aatttgngga 600  
 caaaacaagg 610

<210> 230  
 <211> 346  
 <212> DNA  
 <213> Homo sapiens

<400> 230  
 ggtcggccga ggtaccatgc actgagtgc tgtggggatc atgttggtat aatgaacaca 60  
 agacacattg ctttttctgg aaacaaatgg gaacaaaaag tatactcttc gcatactggc 120  
 taccagggtg gatttagaca agtaacagct gctcagcttc acctgagga tccagtggca 180  
 attgtaaaac tagctattta tggcatgctg ccaaaaaacc ttcacagaag aacaatgatg 240  
 gaaagggtgc atctttttcc agatgagtat attccagaag atattcttaa gaatttagta 300  
 gaggagcttc ctcaaccacg aaaaatacct aaacgtctag atgagt 346

<210> 231  
 <211> 601  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(601)  
 <223> n = A,T,C or G

<400> 231  
 ggtacgcggg gagagcacat ccggtgttag aagcgctggt aggccttgga gaggcgggtt 60  
 aggaagagtg gagactgctg caggactct ggaaccatga acatatttga tcgaaagatc 120

aactttgatg	cgcttttaaa	atttttctcat	ataacccccgt	caacgcagca	gcacctgaag	180
aaggtctatg	caagtttttg	ccttttgatg	tttgtggcgg	ctgcaggggc	ctatgtccat	240
atggtcactc	atttcattca	ggctggcctg	ctgtctgcct	tgggctccct	gatattgatg	300
atttggctga	tggcaacacc	tcatagccat	gaaactgaac	agaaaagact	gggacttctt	360
gctggatttg	cattccttac	aggagtggc	ctgggccctg	cctggagttt	tgnattgctg	420
tcaaccccac	atccttcac	tgctttcatg	ggcccgaat	gatctttacc	tgcttaacct	480
taatgcactc	tatccaagcg	ccgtactcct	tttctgggag	gatcttgatg	tcagcctgaa	540
cttggtgctt	gcttcctggg	gaatgtttct	ttggatccat	tggcttttca	gcnaactttt	600
t						601

&lt;210&gt; 232

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(390)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 232

actttttttt	ttttttttt	ttttttttt	ttggttttaa	tgtttatttc	cccaagacag	60
cctagcctgc	actctacttg	gataaaat	acaagctagt	tttctgctgc	ttctagtttt	120
aaactttaac	catgtttctg	atgacaagga	atgctgcaaa	aatactctag	ttcaacaaag	180
agttatgatc	acaaaataat	ttttatccat	tctacagtgt	ttcanaatta	ccagttgatt	240
tttaaacaca	aagtagatat	agatgcta	ggtggcta	ctggatggtt	tcttatagca	300
aactgttggt	catgcaacac	ttgtgctcaa	aggggaaggc	acaggatttc	ctacaatgag	360
ccaccttata	aagagtctt	tttgnacctn				390

&lt;210&gt; 233

&lt;211&gt; 603

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(603)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 233

cgaggtagc	gggggaagag	tgagggttcc	aacttttctg	cttatctggg	aggtgttggg	60
cgcggacaat	cgagatgtca	gagaaaaagc	agccggtaga	cttaggtctg	ttagaggaag	120
acgacgagtt	tgaagagttc	cctgccgaag	actgggctgg	cttagatgaa	gatgaagatg	180
cacatgtctg	ggaggataat	tgggatgatg	acaatgtaga	ggatgacttc	tctaactcagt	240
tacgagctga	actagagaaa	catgggtata	agatggagac	ttcatagcat	ccagaagaag	300
tggtgaagta	acctaaactt	gacctgctta	atacattcta	gggcagagaa	cccaggatgg	360
gacactaaaa	aaatgtgttt	atttcattat	ctgcttggat	ttatttgtgt	ttttgtaaca	420
caaaaaataa	atggtttgat	ataagaaaaa	annnnnnnna	aaaaaaaagt	nctggccngg	480
cggccgttca	aanggccaat	tccaccct	ggcgccgta	ctaanggacc	aacttgncc	540
aacttgggga	atcanggcaa	actgggtcct	gnggaaatgg	ntcccttcc	aattccccaa	600
atn						603

&lt;210&gt; 234

<211> 616  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(616)  
 <223> n = A,T,C or G

<400> 234

cgaggtacct	tcattgcat	caaaccagat	ggggtccagc	ggggtcttgt	gggagagatt	60
atcaagcggt	ttgagcagaa	aggattccgc	cttggttggtc	tgaaattcat	gcaagcttcc	120
gaagatcttc	tcaaggaaca	ctacgttgac	ctgaaggacc	gtccattctt	tgccggcctg	180
gtgaaataca	tgactcagg	gccggtagtt	gccatggtct	gggaggggct	gaatgtgggtg	240
aagacggggc	gagtcagtct	cggggagacc	aaccctgcag	actccaagcc	tgggaccatc	300
cgtggagact	tctgcataca	agttggcagg	aacattatac	atggcagtga	ttctgtggag	360
agtgcagaga	aggagatcgg	cttggtggtt	caccctgagg	aactggtaga	ttacacgaac	420
tgtgctcana	actggatcta	tgaatgacag	gaaggcagac	ccattgnttt	tcacatncat	480
ttcccttcnt	tccattgggc	aaaggaccag	ctttnggaaa	tctantnttt	accnnggacct	540
tattcttaat	ttgganggaa	actnttggac	tttgangtnt	tcctntacct	ngccccggng	600
gccgtttaaa	agggna					616

<210> 235  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(607)  
 <223> n = A,T,C or G

<400> 235

acgcggggag	tcggttactt	acctcgactc	ttagcttgtc	ggggacggta	accgggaccc	60
ggtgtctgct	cctgtgcgct	tcgcctccta	atccctagcc	actatgcgtg	agtgcatctc	120
catccacgtt	ggccaggctg	gtgtccagat	tggcaatgcc	tgctgggagc	tctactgcct	180
ggaacacggc	atccagcccg	atggccagat	gccaagtgc	aagaccattg	ggggaggaga	240
tgactccttc	aacaccttct	tcagtgcagc	gggcgctggc	aagcacgtgc	cccgggctgt	300
gtttgtagac	ttggaaccca	cagtcattga	tgaagtgcg	actggcacct	accgccagct	360
cttcaccctg	agcagctcat	cacaggcaag	gaagatgctg	ccaataacta	tgccccgangg	420
cactacacca	ttggcaagga	gatcattgac	cttgngttgg	acccaattcc	aaacctggct	480
gaccatgcac	cgggctttan	ggnttnttgg	gttttcccaa	antttggggg	ggaactgggt	540
ttgggttaac	ttcctgntna	tggnacgntt	ttaaataaat	ntgggaaaaa	tccaactggn	600
gnntttcc						607

<210> 236  
 <211> 608  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(608)

<223> n = A,T,C or G

<400> 236

acgcgggcat	gcaacaccac	acccagcctg	aaacccagat	ttttaatatg	aaatcaaagt	60
cttcagacct	tgtaggtgtc	ataaaaaagca	cgctgaggac	cactagtttg	caactgccaa	120
tctaaaatat	catagacatt	atatcacttc	aaccacgaaa	aaaaagtatg	tgaggcagaa	180
aatggaagca	accatgccta	atttattgtt	gaatactttt	tccgtatacc	aagagcttcc	240
tttgactag	catctgaaac	tatatccaga	atgacactgg	ttttcataaa	agtgttgatc	300
ctcacacctc	tttatagtct	tgcacctagc	acagtggagt	gaaacacttt	aaatagcact	360
tgntccttga	gtatatatgg	aaaaaagtga	agtattgata	aagtgtctca	ctaatatgag	420
cagcatctca	ggagtctcca	attcttgaat	taccagggag	tatttttacc	attttcccca	480
ntgnaaggcc	ttttttgaga	nacttaccct	caaathgaan	gnnttaagca	tgntcctttt	540
tttttccttt	tttttttgan	aaaagggtt	gctntgtggc	caggttggan	tgctactntg	600
aaaattcn						608

<210> 237

<211> 609

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(609)

<223> n = A,T,C or G

<400> 237

actattttcat	atattgtgtg	agccccacaa	atgtctatntt	taaaaagagt	atagtccctg	60
gccaggcgcg	gtggctcacg	cctgtaatcc	cagcagtttg	ggaggccgag	gtgggcggat	120
cacctgaggt	ctggagtctg	agaccagcct	gaccaatatg	gtgaaacccc	gtttctacta	180
aaaatacaaa	attagctggg	catggtggag	catgcctgta	atcccagcta	ctcggggaggc	240
tgaggcagga	gaatcacttg	aacccgggag	gcgaaggctg	cagtgcagcca	agatcacgcc	300
attgcactcc	agcctgagca	acaagaggga	cactccgtcc	ccaaaaaaaa	aataataaaa	360
aaaataaaaa	ataaaaaata	aaagagtata	gttcccaatg	ggttctacaa	acattcctga	420
tttatactgg	gggaagtgat	gcctaantgg	gaacattaat	cattatgggt	tcgaaaatta	480
aatattttctg	caaacaattc	ctttgcaaat	gctaacttgc	catgagctta	ccccatttga	540
aattgngnct	ttacaaagac	cttggccgga	ccccttangg	ngaattcagn	cactggngggg	600
cgttctttg						609

<210> 238

<211> 616

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(616)

<223> n = A,T,C or G

<400> 238

acgaggcggt	gcgggaagtc	ctgcacggga	accagcgcaa	gcgccgcaag	ttcctggaga	60
cggtggagtt	gcagatcagc	ttgaagaact	atgatcccca	gaaggacaag	cgcttctcgg	120
gcaccgtcag	gcttaagtcc	actccccgcc	ctaagttctc	tgtgtgtgtc	ctgggggacc	180
agcagcactg	tgacgaggct	aaggccgtgg	atatcccca	catggacatc	gaggcgctga	240

aaaaactcaa	caagaataaa	aaactgggtca	agaagctggc	caagaagtat	gatgcgtttt	300
tggcctcaga	gtctctgatc	aagcagattc	cacgaatcct	cggcccaggt	ttaaataagg	360
caggaaaaagt	tcccttctctg	ctcacacaca	acgaaaacat	ggtggccaaa	agtggatgag	420
gtgaagtcca	caatcaagtt	ccaatgaaga	aggggtatgt	ctggcttgta	acttgttggt	480
cacgtgaaga	tgacngacga	tgacttgngt	ataacattna	nctgggctgg	caacttcttg	540
gggcaatgnt	caanaaaaact	ggcaaaaatgt	cggggccttt	tttttagagc	cccttggnaa	600
accccgangcc	ntttta					616

<210> 239  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (607)  
 <223> n = A,T,C or G

acagtctgtt	cgagaacacc	ttgggtcatga	aagtgacaac	ctgctgtttg	ttcagatcac	60
aggcaaaaaa	ccaaactttg	aagtgggttc	ttctaggcag	cttaagcttt	ccatcaccaa	120
gaagtcttct	ccttcagtga	aacctgctgt	ggaccctgct	gctgccaaagc	tgtggaccct	180
ctcagccaac	gatatggagg	acgacagcat	ggatctcatt	gactcagatg	agctgctgga	240
tccagaagat	ttgaagaagc	cagatccagc	ttccctgagg	gctgcttctt	gtggggaaaag	300
ggaaaaagag	gaaggcctgt	aagaactgca	cctgtggcct	tgccgaagaa	ctggaaaaag	360
agaagtcaag	ggaacagatg	aacttccaac	ccaagtcaac	ttgtggaaac	tgctcctggg	420
cgatgccttt	cgttgtgcca	ctggccctac	cctgggatgc	cagcntnaaa	ctggggaaaa	480
gngcttctaa	tgatancatc	tttattgaag	cctaagaagg	ttctgaattg	ggaccctttt	540
gttcttcaac	caattctggg	cttaaatcca	ccttgggggt	cttccacctc	cttggatttg	600
ncacctt						607

<210> 240  
 <211> 615  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (615)  
 <223> n = A,T,C or G

ggtacgcggg	gctttttcaca	agatggcgcc	gaaagcgaag	aaggaagctc	ctgcccctcc	60
taaagctgaa	gccaaagcga	aggcttttaa	ggccaagaag	gcagtgttga	aaggtgtcca	120
cagccacaaa	aagaagaaga	tccgcacgtc	acccaccttc	cggcgccga	agacactgcg	180
actccggaga	cagcccaa	atcctcgga	gagcgctccc	aggagaaaca	agcttgacca	240
ctatgctatc	atcaagtttc	cgctgaccac	tgagtctgcc	atgaagaaga	tagaagacaa	300
caacacactt	gtgttcattg	tggatgttaa	agccaacaag	caccagatta	aacaggctgt	360
gaagaactgt	atgacattga	tgtggccaag	gtcaacacct	tgattcggcc	tgatggagag	420
aagaaggcat	atgttcgact	ggctcctgat	tacnatgctt	tggatgttgc	caccaaattt	480
gggatcattt	aactgagtc	acttgctaaa	tctgaatata	tatatatata	tatatctttt	540
cnccccaaaa	aaaaaaaaaa	aaaaaagtnc	tncccgccgg	ccgttttaaag	gggaattccc	600
cacttggggg	cgttt					615

<210> 241  
 <211> 365  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(365)  
 <223> n = A,T,C or G

<400> 241  
 acgggggggt cgctttgctg ttcgtgatat gagacagaca gttgcggtgg gtgtcatcaa 60  
 agcagtggac aagaaggctg ctggagctgg caaggtcacc aagtctgccc agaaagctca 120  
 gaaggctaaa tgaatattat ccctaatacc tgccacccca ctcttaatca gtggtggaag 180  
 aacggtctca gaactgtttg tttcaattgg ccatttaagt ttagtagtaa aagactggtt 240  
 aatgataaca atgcatcgta aaaccttcag aaggaaagga gaatgttttg tggaccactt 300  
 tggttttctt ttttgcgtgt ggcaagtttt aaagttatta agttttttaa atcaagtacc 360  
 tnggn 365

<210> 242  
 <211> 625  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(625)  
 <223> n = A,T,C or G

<400> 242  
 natngganng ntttccctt aacgtgggcc ncggccgagg nacttttttt tttttttttt 60  
 tttttttttt gcaggcagct atttaattan gntcttaana catttanaac nccaatttgn 120  
 gaanataaat tccattcgct anaacaaacn cagatcgcan gtagccctgg anctgangaa 180  
 taactttgat ttttggnaaa atttngagt ccncagcttt ctgatcaatc ttgcgctgct 240  
 ccnaatctc atatttctct ttttctgggg ccaaaaatctt accttctctg ngctctgggct 300  
 ttcgcaactt cttcttcttg aaagaagcct cagtaaaaat ggtttgggaa ttttacatta 360  
 ctgatatcca atttnggtga aatggcaatg accaatttct nggggggtct tcgtaaaaaga 420  
 actccantga nggnccaaag gtccagtcac aagtataggc nctnaccact gnttcaggaa 480  
 accacctttt gncctggggg gtccatgagg atgaccaa at ggncctgggg naagctggct 540  
 ccantttttt acggcctacc gaagggtttt tgccnnggta aaagttttag ggccattttc 600  
 ngggnaaatc taggcttttg gaaat 625

<210> 243  
 <211> 639  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(639)  
 <223> n = A,T,C or G



```

<400> 243
nncnaattcc nccntaacn ggnccccgc caagnacccc ggncctttg gatgtatnga      60
aatnaacnta ttaatgggga cntattggag aaggaaatnc ctagacctac aacttttnagc      120
naatagcngt gatgttttag gaactgaaat gtcacactta aagtcttnag ccagactact      180
tccctatttt tgtggggaga aaanggccng attagaactg ttctggttgt gtttggcggg      240
agggaataa tttttgttca gtccttctta gtgaccaaac ttaattttt aagaataata      300
tattgactta ctgaactgaa gcattctgag ttgaaaggag ctccncagga ntggagttct      360
gtgttgctca catgttnaaa ncttgctcac cttnatagcn caaggaatac ctatcttcca      420
natnccgcca ttttcatctc ttaaagtagn tccaaagtat gacttgagaa agttgctctn      480
ggattctggg gtcttaaaac tngggattct gggattntgg ggctcnaaag ttnacctgn      540
aaagttgcct gggnttttan aaatnncctg nattctgggg ttttaaaaaa ttttgaaaaa      600
acccncccn ncttgaaagg gaccttaaaa attaacctn      639

```

```

<210> 244
<211> 614
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(614)
<223> n = A,T,C or G

```

```

<400> 244
tcgagccgnc ggcccgggccc aggtactttt tttttttttt tttttttttt gaaaatggag      60
tcttgctctg ntgccaaact ggantgcaat ggtgcgantc gggctcactg naatctccac      120
ctnccgggtt caagcgattc tctgcctca cctccgagta actgggacta cagggtgcgcg      180
ccaccaagcc cagctcattt ttgnattttt agtanaaatg gggtttcacg atgttggtta      240
ngatggntct gatctctggg caaagtcttt tctgnaaata tccttggtta aaaaacaatt      300
ttagactgta gctgttgcaa atgctttaag gaagaaacna aacaactgca gtcttctga      360
aatgaaaaaa ctccccaggg ctgctattna aaacaacccc accagcactt caatcatgat      420
gccnacagtg gccactgaa aaancnggaa aagttcnaat cccaaactgg gatgctcttg      480
actntggaat tntgnggcn ntncnctant ttanacaaa acngnctnng nccctntttt      540
ttgggggaat ttgggaanaa aaaaacttgn gngttcttgn ggttcnttg ttcccaaaaa      600
nactgggggn nggg      614

```

```

<210> 245
<211> 620
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(620)
<223> n = A,T,C or G

```

```

<400> 245
gccgtggtcg cgggcccagg tccatttgcc tcccggcctc aagccgattc tctgcctca      60
gccctccaag tagctgggga ttacaggcac ctgccaccat gcccggctaa tttttgnaat      120
tttagtagag acagggtttc accatgttgc ccaggctggt ttcgaactcc tgacctcagg      180
tgatccaccc gcctcggcct ccaaagtgtc gggattacag gcttgagccc ccgcgcccag      240
ccatcaaaat gctttttatt tctgcatatg ttgaatactt tttacaattt aaaaaaatga      300
tctgntttga aggcaaaatt gcaaatcttg aaattaagaa ggcaaaaatg taaaggagtc      360

```

```

aaaactataa atcaagtatt tgggaaagt aagactggaa gctaatttgc attaaattca 420
caaactttta tactctttct ggatatacat tttttttctt taaaaaacia ctttngatca 480
gaatagcccc atttagaacc ttttggtatc agncaatatt tttaaatagt tnaaccnggc 540
ctaagctnaa agnggcttga tntgagtaaa cttttcaact ggcttgaacc ctnaaccctt 600
taaaatgacc ttccgagntt 620

```

<210> 246

<211> 595

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)...(595)

<223> n = A,T,C or G

<400> 246

```

acttattctt caggggttac tgagtcggca cctatgacag ctaagagagc tttcttaaag 60
actgcctcag tgtcttcttg gcttttggca ccttcactcc actctgcccc ggaaatccac 120
aatggcagac aaacctgggg tttcagggtgc acaaagactt cttcaaaaag catggctatg 180
tcagggtctt ttgactcgat cagcacctgc agcttcagct gccacattgt cccagagtct 240
ctaaacaatt caagttccag ctactgncac ttccagagct tccctcaggaa gttataacac 300
agcaacgaaa cactcaactg cttgtattgg cattctgaca gaagcttcaa gttcatgtgc 360
cttcctgaat acagtcatgg tcttttcaac ctcttctctt aaggaccacac tatttgactt 420
cttaataaat ctttccagcc aaaggngatg aacactttca catgggcctt gtggcaaaag 480
cttnatggct ttttatcncg gacagacctt tctcttcggg cgacctcaat ggtttggtt 540
ggtcgtggag ctggtntttg gctnggactc aacttnaatn ttgcttgccc naaac 595

```

<210> 247

<211> 364

<212> DNA

<213> Homo sapiens

<400> 247

```

gggtacacta gaaagtcttt tacaaaataa tcatcttaga tcaacagaag accaatcttc 60
aatgtcgtcc tgcaagatgg gttactttta catctctccc tgttttctcc aatgttctcc 120
tttagtatgg ctggtaattg ttttggtgat tgccaccccc tcgagatgcc ttgccataag 180
tgctctgttg gccactgtag tctgcataac cctgtccata tccatagtcc ccatagttat 240
accagtata atcatatccg ccatagccac tatagttttg atcaccacca taggcactat 300
tgtaatttcc atatccttga tcataatagt tattaatatc ttggttccag ttttggccct 360
gacc 364

```

<210> 248

<211> 591

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)...(591)

<223> n = A,T,C or G

<400> 248

```

ggtnccagata tcttcaaagg aggaagaaga aagggaaacc agatgggtgga cctgaatatg      60
ncccttancc aganctaatac aacccactca gccagaatag aagaagctgg aatagattcc      120
ccaacctggg ttgccagttc atcttttgac tctattaaaa tcttcaatag ttgggtattct      180
gnaattttcac tctcatgant gcnactgngg cttaactaat attgcaatgn ggcttgaatg      240
taagtagcat cctttgatgc ttctttgaaa cttnatgaa tttgggtatg aacagattgc      300
ctgctttccc ttaaataaca cttaaaatta tttggaccag tcagcacaac atgcctnngg      360
tgnattaaaag cnnggatatg ctggatttta taaaattggc caaattagag aaatntagtc      420
ccatggaaat atattttcttg taaaaaagtg cttgaatctt tttgggtcaag ataatgccac      480
tcttaagaat atcttcncac tnttgangga ttaaataatcg gcantggaaa agccttaaaa      540
atggggtcna cttgccttgn gcctaaaccg accctgaaat gggatttccc n                    591

```

<210> 249

<211> 332

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (332)

<223> n = A,T,C or G

<400> 249

```

actctccgag agggctggtt tcccgcccc gagagcaagt ttattttacca aatgttggag      60
taataaagaa aggcagaaca aaatgagctg ggctttggaa gaatggaaag aaagggctgc      120
ctcaagagct cttcagaaaa ttcaagaact tgaaaggaca gcttgacaaa ctgaagaagg      180
aaaagcagca aaggcagttt cagctttgac agtctcgagg cttgcgcttg cagaaacnaa      240
aacagaaaagg ttgaaaatga aaaaaccag ggtaccttg nccgggacca cgcttaaggc      300
gaaattccaa cacacttggc cggccggtac ta                    332

```

<210> 250

<211> 626

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1) ... (626)

<223> n = A,T,C or G

<400> 250

```

ggtactatta gccatggtea accccaccgt gttcttcgac attgccgtcg accggcgaag      60
ccctttggcc cgcgtcttcc tttgaactgg ttgcagacaa gggccccaaa ganagcagaa      120
aattttcgtg ctctgagcac tggagaaaaa ggatttggtt ataagggttc ctgctttcac      180
agaattattc cagggtttat gtgtcaaggt ggtgacttca cacgccataa tggcactggg      240
ggcaaagtcc atctatgggg aagaaatttg aagatgaaga acttcatect aaagcatacg      300
ggtcctggca tcttgtecat ggcaaagtct ggacccaaca caaatgggtc ccaatttttc      360
atctgcactg gccaaagact antggttgga tggcaaanca tgtngtgntt ggccaaagtg      420
aaagaaggca tgaatatgtt ggaaggccat ggaacgcttt tgggtncnag gaatggcaag      480
aaccnccagg aagaatcacc cnttnttgac tggggacaac tcnaataagt tgacttgggg      540
nttaanttaa cccccancca attccttttg gaactcagga aacacccttc ancccanttn      600
tttcaanttc caaaannttg ggcctn                    626

```

<210> 251

<211> 603  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(603)  
 <223> n = A,T,C or G

<400> 251  
 actttttttt tttttttttt tttttttttt aacagaagaa ctttttngttt cttttattttc 60  
 aatatnngtc ttattaatat ttttcttatt ttataatgca attacaacaa tttaggagac 120  
 aaaacantat aaacaaaaga atgttaaata gtttttttta aaaaatagct tggtgcttgc 180  
 aagaaagtcc atataatctt attccccccc aaatataatt ttatactttg cactaaacca 240  
 aaatagctta tggaaaatta ggtattaaat agctaaacac agaaaaccta cagctataaa 300  
 taacataaaa tacagtttaa ctttaatgng atgcttaaac aaagcaaact atgatgcant 360  
 atgaatcaac ttcattaatt ggacaagtc agtgaggcnc aaattagata agcnctaaac 420  
 cctcatgatg ggcaagtga accttcaccc cagcaagggt ctttcnggtc ttggctatgc 480  
 caattccttc canaaaagnc ccagttttac angtctggct ttttccgggg gaacccccca 540  
 tttnttttnc ccaagtgtgt tnggatttgg ccccccannaa attttttttg gngnaaaaaan 600  
 aan 603

<210> 252  
 <211> 500  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(500)  
 <223> n = A,T,C or G

<400> 252  
 actttatttg ttttttttgt tttgttttgg tttttttttt ggcttgactc aggatttaaa 60  
 aactggaacg gtgaagggtga cagcagtcgg ttggagcgag catcccccaa agttcacaaat 120  
 gtggccgagg actttgattg cacattgttg tttttttaat agtcattcca aatatgagat 180  
 gcattgttac aggaagtccc ttgccatcct aaaagccacc ccacttctct ctaaggagaa 240  
 tggcccagtc ctctcccaag tccacacagg ggaggtgata gcattgcttt cgtgtaaatt 300  
 atgtaatgca aaattttttt aatcttcgcc ttaatacttt tttattttgt tttattttga 360  
 atgatgagcc ttctgtgccc cccttcccc ttttttgtcc cccaacttga gatgtatgaa 420  
 ngcttttggg ctccctggga agtgggtgga ngcagccagg gcttacctgt accttggccg 480  
 cgaacaccta aggccaantt 500

<210> 253  
 <211> 634  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(634)  
 <223> n = A,T,C or G

```

<400> 253
tcgagcggcc ngcccgggca ggtactatta gccatggtca aacccccacce gtgtttcttcg      60
acattgcccg tcgacggcga acccttgggc cgcgctctcc tttgagctgt ttgcagacaa      120
ggtcccaaag acagcagaaa attttcgtgc tctgagcact ggagagaaaag gatttggtta      180
taagggttcc tgctttcaca gaattattcc aggggttatg tgtcaggggt ggtgacttca      240
cacgccataa tggcactggg ggcaagtcca tctatgggga gaaatttgaa gatgagaact      300
tcctcctaaa gcatacgggt cctggcatct tgtccatggc aaatgctgga cccaacacaa      360
atggttccca gtttttcatc tgcactgcca agactgantg gttggatggc aaacatgtgg      420
tgtttggaag antgaaagaa ngcatgaata ttgtggaagc catgganccc tttnggtcca      480
ggaatggcag aacnncagg aanacaccct tgntgactgt ggcaactcga ataaattgac      540
ttgggggttat cttaaccncc caacattcct ttggacttag gaancanccc ttcancnccnt      600
tggttcaant tccccaaaat ttgggctncc tnnng                                     634

```

```

<210> 254
<211> 602
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(602)
<223> n = A,T,C or G

```

```

<400> 254
nctttttttt tttttttttt ttttttaaat taattaatta aaaaataggt ggnctactgg      60
tggtccttaa gctggaantg cagtgggcac aatcatggnt cactgnagtc tnaacctncc      120
aggttcaagt gatcctccta cctcacctcc antagctggg attacaggca tatgcgacca      180
tgccagccta attttttatt ttttgtaaaa acggggtctc actatgtcgc ccangctggn      240
cttgaactcc tgaactcaag tgacccttcc gncnacctn caaagtgcta ggcttacagg      300
tgtgaaccac catgcctggc ctaaaaaatt tatttttaaaa aagtaattta tctcttacag      360
ttgtggaggc tgagaaatcc aangncaant ggcnattttg gtgaaaacct tnttgctggt      420
ggggactctg tgaaatnccc aantggcnca tgcatnacac antgangggg cttacattcc      480
aacatgctat ctcttttaag ttttaagata cnggcnaaaa tntgaacntg aatgactttna      540
aatccacnca ttcnctttt ggacnaaaaa cntgggcaa ttgggatctt ggcnttttna      600
aa                                                                                   602

```

```

<210> 255
<211> 614
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(614)
<223> n = A,T,C or G

```

```

<400> 255
cgaggtacag gtaagccctg gctgcctcca cccactccca gggagaccaa aagccttcat      60
acatctcaag ttggggggaca aaaaaggggg aagggggggc acgaaggctc atcattcaaa      120
ataaaacaaa ataaaaaagt attaaaggca agattaaaaa aattttgcat tacataattt      180
acacgaaagc aatgctatca cctccctgtg gtggacttgg gagaggactg gaccattctc      240
cttagagaga agtgggggtg cttttaggat ggcaaggggc ttcctgtaac aatgcatctc      300
atatttgga tgaactattaa aaaaacaaca atgtgcaatc aaagtccctc gccacattgt      360

```

gaactttggg	ggatgctcgc	tccaacccga	ctgctgtcac	cttcaccggt	ccagttttta	420
aatcctgagt	caagccaaaa	aaaaaaaaacc	anaccaaacn	nanaaaccaa	ttaagccatg	480
ccaatctcat	ctggtttctg	cncaagtang	gttgncaaaa	aagggttacc	ncactaantc	540
ntagcccta	aacnnttgcg	ggggncantg	angggccgan	tttganactc	cggntggtga	600
nccanttggn	ggag					614

<210> 256  
 <211> 308  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(308)  
 <223> n = A,T,C or G

<400> 256						
nentccagca	gtgggtcatt	cgncaacgaa	agtcntaccg	tagaaaagat	ggcgtgtttc	60
tttatattga	agataatgca	ggagtcatag	tgaacaataa	aggcgagatg	aaagggtctg	120
ccattacagg	accagtagca	agggaaatgtg	cagacttgtg	gccccggatt	gcatccaatg	180
ctggcagcat	tgcattgattc	tccagtatat	ttgtaaaaaa	taaaaaaaaa	ctaaacccaa	240
aaaaaaaaat	nnnnnnnaac	annnnanaaa	aannnnnaaaa	aaaaaaaagta	cctngggccgn	300
gaccacgc						308

<210> 257  
 <211> 602  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(602)  
 <223> n = A,T,C or G

<400> 257						
gcgtgggtcgc	nggccgaggt	acgcggggga	gacaaaccat	accatatccc	accagagagt	60
cgcagacact	atgctgcctc	catggccctg	cccagtgtat	cttggatgct	gctttcctgc	120
ctcatgctgc	tgtctcaggt	tcaagggtgaa	gaaccccaga	gggaactgcc	ctctgcacgg	180
atccgctgtc	ccaaaggctc	caaggcctat	ggctcccaact	gctatgcctt	gtttttgtca	240
ccaaaatcct	ggacagatgc	agatctggcc	tgccagaagc	ggccctctgg	aaacctggtg	300
tctgtgctca	ntggggctga	gggacccctc	gtgtccctcc	tgggtgaagag	cattggtaac	360
agctactcat	acgtctggat	tgggtcccat	gacccacac	agggcaccga	acccaatgga	420
aaangntggg	antggaataa	cantgatgtg	atgaattact	ttgcatggga	gagaaatcct	480
tcancatttt	naaccccggc	cctgtccaac	ctntcaaaaa	cncacatttt	taaggggaaa	540
attttactgg	atgggganggt	acccttttnt	ggaagtactg	cttttcngga	nggaagtacc	600
cc						602

<210> 258  
 <211> 600  
 <212> DNA  
 <213> Homo sapiens

<220>

<221> misc\_feature  
 <222> (1) ... (600)  
 <223> n = A,T,C or G

<400> 258  
 ggtgtntgng ncttatntgt agcggcgccg ntgggttctga aatcgccctc agcggcgccg 60  
 cagtentatt atgtgnatgt ccctaccacn aaaatncaga ttaattggna tgctcattac 120  
 ccacgtgaac gccaaagccc ttcgaagtag tgctgccctg cactnaatca agaagttgca 180  
 ttaaaattag aaccaaattcc agagtcactg gaactttctt ttaccatgcc ccnattcag 240  
 gatcagacac ctagtccttc cgatggaaag cactagacaa agttcacctg agcctaatag 300  
 tcccagtgaa tattgggttt atggggatag gtgatatggn caatgaattc aagttggaat 360  
 tgggnagaaaa actttttgct naagacncng aagcnaagaa cccattttct actnaaggca 420  
 cagattttaga cttggagatg gtagcttctt atatccaatg gatgatgctt tcagtcgctn 480  
 cnttgatcag tgncaenttn gaaagcagtt cccaagncct gnaaccagc cctaagccaa 540  
 gtccggttcn gcgattaatc cgactatgta tgcccttcat ngcccctgtn ataaacnggn 600

<210> 259  
 <211> 600  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (600)  
 <223> n = A,T,C or G

<400> 259  
 gccgaggtac atgggaaagg gagtatggng agctatttcc tttttaaagg atgaagacct 60  
 tcataaattg gccctcggga ttctggtgat tcccgcccg c aagcgcaa at gctccagtgn 120  
 gttatgaaaa tgnttgntaa tctgctctgg ttcttcaactg gattcaagan tcgggaggnc 180  
 ttctcgaatc ttttgataa nctgggttaa aacctgaatt gntaccgca tcattttcct 240  
 tttcataaaa atagatatat ctgntcagaa tttctatnaa aagctgcact tgtaganang 300  
 ggtccatgca ctgatttgct atttttaaag ctttttttan gcactccatt accctnttgc 360  
 cttcgtgaaa cttcttccca tttttgncn gggtctggcn gaccngaaga aatgtgcca 420  
 agtgcttaca agttnggcct gacaaggctt nttaaaantt tggatgtacc aagggccccc 480  
 tgggtcctca aaggtcatga atctttttac tggaaccctt atcctttnaa aaggccatgg 540  
 tcaagggaat gnncttcttg gctttgaaac ccggattaan tttttncaa aaaagccngn 600

<210> 260  
 <211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (593)  
 <223> n = A,T,C or G

<400> 260  
 acgcgggaac tccatcctca ccacccacac caccctggag cactctgatt gtgccttcat 60  
 ggtagacaat gaggccatct atgacatctg tcgtagaaac ctogatatcg agcgcccaac 120  
 ctacactaac cttaaccgcc ttattagcca gattgtgtcc tccatcactg cttccctgag 180  
 atttgatgga gccctgaatg ttgacctgac agaattccag accaacctgg tgccctaccc 240

ccgcatccac	ttcctctggc	cacatatgcc	cctgtcatct	ctgctgagaa	agcctaccat	300
gaacagctta	ctgtagcaga	gataccaat	gcttgctttg	agccagccaa	ccagatgggtg	360
aaatgtgacc	ctcgccatgg	taaatacatg	gcttgctgcc	tggtataccg	tggtgacntg	420
ggtncaaaag	atgtcaatgc	tgccttggca	ccattcaaac	caagcgcaga	ttcaatttgg	480
ggatgggtgc	cactggcttt	aaggtnnat	naactaccag	cttccactgn	ggnnctgggtg	540
gaaactngcc	aaggnnccct	ggccggaaca	ccctangggg	aattcanncc	act	593

<210> 261  
 <211> 343  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(343)  
 <223> n = A,T,C or G

<400> 261						
cctacctctc	ttncactgc	aaatttcttg	gatagaccaa	aagtgaattt	gattatgtgt	60
tggctgaagt	tcttcattct	gactgttgan	gggaggtttt	cctttgaaga	gtttcatcc	120
cagactcagc	tgtcttttca	catggatgaa	ataattcctg	ctaccaacaa	cagagcttca	180
ccaggaagtt	gagttttcaa	gatgccttgt	tgctttgaag	aagggagtga	tgtcaattct	240
cttgntacat	tctcccttta	gcaacctgag	taagagactc	tctgccactg	ggctgcaaaa	300
aaataaatta	cttgaatctc	cccttgcccc	angctgaggt	acc		343

<210> 262  
 <211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(593)  
 <223> n = A,T,C or G

<400> 262						
actttttttt	ttttttttt	tttttttggt	ttttttttt	ttttttttt	ttttttttt	60
ttttttttt	ttacagnn	ttttcatttt	tattactcaa	aaaagtttca	tttttttnat	120
ttanctttnt	gactntgggc	ttgggccttn	aacantttca	naacgatttt	ntgctcctcg	180
anaaggaaa	cnccttgat	cctgncacna	acncttttag	cncacatgga	accnccatag	240
gccttgntga	catgtttctt	tgtttnggac	aatntcataa	aaacttttagg	nnttacagca	300
cnaaccctn	naagtntgcc	tgggcncaca	ccanatgcaa	attttggggc	tttcccaacc	360
ttnttggnat	aaaggtaaac	aattttatta	ccaggggggtt	cgggacaacc	tanttttggt	420
aaaggctgta	ttgtaggaaa	acctacctcg	ggatgtcaaa	cccttnacca	ttttgagggn	480
ctggaaanaa	ngttcccggg	aanccccggg	tancttnggc	cggaaacccc	taangggnga	540
attccnaccn	cttgggggcn	gtantaaggg	ganccaantt	gggccaaant	tgg	593

<210> 263  
 <211> 591  
 <212> DNA  
 <213> Homo sapiens

<220>



<221> misc\_feature  
 <222> (1) ... (591)  
 <223> n = A,T,C or G

<400> 263  
 accaagagtt tgctcctggc tgctttgatg tcagtgtctgc tactccacct ctgcggcgaa 60  
 tcagaagtaa gcaactttga ctgccgtctt ggatacacag accgtattct tcatacctaaa 120  
 tttattgtgg gcttcacacg gcagctggcc aatgaaggct gtgacatcaa tgctatcatc 180  
 tttcaciaag aaaaagttgt ctgtgtgctg aaatccaaaa cagacttggg tgaaatatat 240  
 tgtgcgtctc ctcaagtaaaa aagtcaagaa catgtaaaaa ctgtggcttt tctggaatgg 300  
 aattggacat agcccaagaa cagaaagaac cttgctgggg ttggagggtt cacttgcaca 360  
 tcatggaggg tttaatgctt atctaatttg tgcctcactg gacttgncaa ttaatgaagt 420  
 gatcatattg catcataagt ttgctttggg taancttaca tttaaagttaa ctggatttta 480  
 aggggaattat actgtagggt ctggggtaac tatttaatac taattttcat aacnattttg 540  
 gttaatncca agttnaaatt tatttggggg gaanaaaatt tttggccttc t 591

<210> 264  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (595)  
 <223> n = A,T,C or G

<400> 264  
 accaagagtt tgctcctggc tgctttgatg tcagtgtctgc tactccacct ctgcggcgaa 60  
 tcagaagtaa gcaactttga ctgccgtctt ggatacacag accgtattct tcatacctaaa 120  
 tttattgtgg gcttcacacg gcagctggcc aatgaaggct gtgacatcaa tgctatcatc 180  
 tttcaciaag aaaaagttgt ctgtgtgctg aaatccaaaa cagacttggg tgaaatatat 240  
 tgtgcgtctc ctcaagtaaaa aagtcaagaa catgtaaaaa ctgtggcttt tctggaatgg 300  
 aattggacat agcccaagaa cagaaagaac cttgctgggg ttggagggtt cacttgcaca 360  
 tcatggaggg gtttagtgct tatctaattt gtgcctcact ggacttgtcc aattaatgaa 420  
 gttgattcat attgcatcat agtttgcttt gggttaagcat cacattaaaag ttaaactgga 480  
 ttttatggta tttatagctg nanggtttct ggggttanct atttaatact aaattttccat 540  
 aagctttttg gggttaangcc aagnttaaaa tttttttggg ggggaaaaaa atttt 595

<210> 265  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (592)  
 <223> n = A,T,C or G

<400> 265  
 ggtacttttt tttttttttt tttttttttt ttgaaaatta tactttttatt tgagtcacca 60  
 ggagaaagat tcaacttgtg ttcaagtcaa atgttcanaa tcataacagg ccanaaagggt 120  
 ttgatcccga gcacaagccc acgagggagg ggaccaaaac agaccaaaat gagacaacaa 180  
 ccccatataa aaagatgaac tggcggcttc acacactcac acacatacac atacacacgg 240

```

atgaaatggt tggacagagg caaatttcac gtggtcattt ctgtttcttt ttaaatacag      300
gtttgtgggg tggatatttg ttttttccag ctataaaaaa aggcccaaaa gtgcatgtgt      360
gaggggggaa aggcagaaat taagcaataa agtcattttc cctggaggga catganaggg      420
agaaaaacagg aggcaattgc tggganaacg cactttctta acactgggct tttgggtatt      480
cttantattg gncncaaaaa agttattttc acatttctaac tttgaagnct ntttccnggg      540
attnaatggn ccttaaaacc tttgggaact ttaaaaaaac cngggcttac cc      592

```

&lt;210&gt; 266

&lt;211&gt; 594

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(594)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 266

```

acgcggggaa aaaaaaggca gtattccctt tttaaatgag ctttcaggaa gttgctgaga      60
aatggggtgg aataggggaa tgtaatggcc actgaagcac gtgagagacc ctgcgaaaaat      120
gatgtgaaag gaccagtttc ttgaagtcca gtgtttccac ggctggatac ctgtgtgtct      180
ccataaaagt cctgtcacca aggacgttaa aggcatttta ttccagcgct ttctagagag      240
cttagtgtat acagatgagg gtgtcccgtt tcttctcact tctgttggtt acctaccgta      300
cagagattag cctgtagctt atatttgaca ttcttccact tctgttggtt acctaccgta      360
gctttttacc gttcacttcc ccttccaaact atgtcccaga tgtgcaggct cctcctctct      420
ggactttctn caaaggcact tgacccttcg gnctctactt ggccccctnac ctcacccctt      480
tctggcaccg gncntgngac attcacttcn gagaagaccn cccccaagga ggcnngcgnt      540
tggnccanga aaaaaccccg gggaagggtt tntttttttn aaagggaat ttcc      594

```

&lt;210&gt; 267

&lt;211&gt; 598

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(598)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 267

```

actggccctc ggtgctggca aaggtgtagt tccactggcc gagggaatca agacatagtg      60
gtccttctgc taagccaagg gctgccacaa tgacacagta gccagatcct gcaattccaa      120
tgagagcagc caatacagaa gaaagcatcg cacatcgttt gccacagttt tcatggccac      180
agcagccaca gcagtcaccc tgttccagcc caatgaagac aaatgctggc aggagcatca      240
gcagggccac ctctacgat gccagaaaag aaccacacga aacggctgag gtgggttttcg      300
gaggcatact ttgttcccat tgggaaagta aagccaaata ttacccgcga tgcacaggaa      360
ggggcgagcc caaccagaaa atgtccgaat gcacgtgta cacttcccat agcacatggg      420
ggtcttgcta gggttttctc ccccttctct ttggncttca acttcagtga taccctaaat      480
tagatgaaag tgggtgccctt ttgggtggaa aaagcaaaca ccaaccccggtgtacctttgg      540
gccggaacac ncttaaggcc aattccannc aattggcggc ccgtacttan gggatccc      598

```

&lt;210&gt; 268

&lt;211&gt; 590

<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(590)  
<223> n = A,T,C or G

<400> 268  
ggacatatta tcaataggct ataagatgta acaacgaaat gatgacatct ggagaagaaa 60  
catcttttcc ttataaaaat gtgttttcaa gctgttggtt taagaagcaa aagatagttc 120  
tgcaaattca aagatacagt atcccttcaa aacaaatagg agttcaggga agagaaacat 180  
ccttcaaagg acagtgttgt tttgaccggg agatctagag agtgctcaga attagggcct 240  
ggcatttgga atcacaggat ttatcatcac agaaacaact gttttaagat tagttccatc 300  
actctcatcc tgtattttta taagaaacac aagagtgcac accagaattg aatataccat 360  
atgggattgg agaaagacaa atgtggaaga aatcatagag ctggagacta cttttgtgct 420  
ttacaaaact gtgaaggatt gtggtcacct ggaacaggtc tncaatctat gtagcactat 480  
gtggctcanc cttggtaacc cttggattat atatcaacct gnaacatgng nctgggactt 540  
actttcnaaa cnaaatnttc cttntttgaa gaaaatctgg gtttttgnaa 590

<210> 269  
<211> 602  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(602)  
<223> n = A,T,C or G

<400> 269  
acttgaagga agtcgaatca gagatagact ctgaagaaga acttataaat aaaaaaagaa 60  
tcatagagaa agttattcat cgactcacac actatgatca tgttctaatt gagctcaccc 120  
aggctggatt gaaaggctcc acagagggaa gtgagagcta tgaagaagat ccctacttgg 180  
tagttaaccc taactacttg ctggaagatt gagatagtaa aagtaactga ccagagctga 240  
ggaactgtgg cacagcacct cgtggcctgg agcctggctg gagctctgct agggacagaa 300  
gtgtttctgg aagtgatgct tcaggatttg ttttcagaaa caagaattga gttgatggct 360  
ctatgtgtca cattcatcac aggtttcata ccaacacagg cttcagcact tncntttggt 420  
ggtggttcct ggtcccntgg aagttggaac caaattaatg gngtagtctc tatacccaat 480  
acctttgggtt ttcattgtgta anaaaaaggn ccattacttt taanggattg tgctggnctt 540  
attgngccan taactttttt ttaaattggcc cagttacngg ttttaattct taaaannaaa 600  
aa 602

<210> 270  
<211> 595  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(595)  
<223> n = A,T,C or G

&lt;400&gt; 270

ggtacgcggg	ggtaggagcc	tctctcccta	ctgctgctac	acaagaccct	gagactgacc	60
tgcaggacga	aaccatgaag	agcctgatcc	ttcttgccat	cctggccgcc	ttagcggtag	120
taactttgtg	ttatgaatca	catgaaagca	tggaatctta	tgaacttaat	cccttcatta	180
acaggagaaa	tgcaaatacc	ttcatatccc	ctcagcagag	atggagagct	aaagtccaag	240
agaggatccg	agaacgctct	aagcctgtcc	acgagctcaa	tagggaagcc	tgtgatgact	300
acagactttg	cgaacgctac	gccatggttt	atggatacaa	tgctgcctat	aatcgctact	360
tcaggaagcg	ccgagggacc	aaatgagact	gagggaagaa	aaaaaatctc	tttntttctg	420
gaggctggca	cctgattttg	tatccccctg	tagcagcatt	actgaaatac	ataggcttat	480
atacaatgct	tctttctgga	tattctcttg	gcttgggtgg	accccttttt	ccggccccag	540
aattgttaan	taatngaann	ncntncann	aagggnnaa	aggnaaatca	ncctt	595

&lt;210&gt; 271

&lt;211&gt; 592

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(592)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 271

ggtacattga	gatccgcct	ctacaaaatc	aaaaaattag	ccaggcaagg	tggtgcgtgc	60
ctgtcgcccc	agctacttgg	caggctgagc	tcaggaggtc	aagcctgcct	tggtccatga	120
tcatcccatg	cactccagcc	tgacattcag	agcaagacct	tgtctcaaag	aaagaaaaac	180
atTTTTatgg	tgttttcttt	tttagtcttt	tcaataatga	aaattttcat	tttacaggta	240
aatgaaagg	cctggcattt	attcaagatc	ctgatggcta	ctggattgaa	atTTTgaatc	300
ctaacaaaat	ggcaacctta	atgtagtgtc	gtgagaattc	tcttttgaga	tttcagaaga	360
aaggaaacaa	tgtgtattca	gatatttaca	taccagaagc	atctaggact	gatggatcac	420
tgtcccgatt	caaattattc	ttcagtcctc	ttcccccttc	tatttcagct	ggtccttttc	480
acctaactgt	cagtcattct	ggtttcaacn	atgctttatc	tcatgtcctt	gaatatagtt	540
ggggnaacttt	aattttttang	gaataatnna	acagnttcen	ttaaaggntn	ng	592

&lt;210&gt; 272

&lt;211&gt; 607

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(607)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 272

acattaaagt	gtgatacttg	gttttgaaaa	cattcaaaca	gtctctgtgg	aaatctgaga	60
gaaattggcg	gagagctgcc	gtgggtgcatt	cctcctgtag	tgcttcaagc	taatgcttca	120
tcctctctaa	taacttttga	tagacagggg	ctagtcgcac	agacctctgg	gaagccctgg	180
aaaacgctga	tgcttggttg	aagatctcaa	gcgcagagtc	tgcaagttca	tccccctctt	240
cctgaggtct	gttggttgga	ggctgcagaa	cattggtgat	gacatggacc	acgccatttg	300
tgcccatgat	gtcaggctcg	gcaacaggct	ccttgggtgac	actcaccaca	ttgnttttca	360
agctgacttt	cagcttgnc	ccttggagag	actttaaccc	ggaccaaggg	cccgatgcct	420
tccgttacc	aggaatttca	tcaccaatgg	tggtanttca	ggaatgttgg	caagtttct	480

tggcatnttc	ccaaanagtt	tggtcccgtt	cttnttgggn	ggcangggct	tcggaaaggg	540
ttnattttgt	ngggaaccna	aaaactgggg	tnaaactcct	tnccggttna	ngggtttccg	600
nnanccn						607

<210> 273  
 <211> 398  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(398)  
 <223> n = A,T,C or G

<400> 273						
ggtaccgcca	ttattctttt	gggcaccttt	ggttggtttt	ctacctgccg	agcttctgca	60
tggaatgctaa	aactgtatgc	aatggtttctg	actctcggtt	ttttggtcga	actgggtcgct	120
gccatcgtag	gatttggttt	cagacatgag	attaagaaca	gctttaagaa	taattatgag	180
aaggctttga	agcagtataa	ctctacagga	gattatagaa	gccatgcagt	agacaagatc	240
caaaatacgt	tgcattgttg	tggtgtcacc	gattatagag	attggacaga	tactaattat	300
tactcagaaa	aaggatttcc	taagagttgc	tgtaaaacttg	aagattgtac	ctgccccggg	360
ccgnccgctc	gaaagcttaa	ntggccggtt	cnaanncg			398

<210> 274  
 <211> 587  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(587)  
 <223> n = A,T,C or G

<400> 274						
actttttttt	ttttttttt	tttggtgaat	caaaagcagg	gtttattttt	ctatcaaadc	60
cccaatccat	gttccagcca	atggatgaag	ggtgaatcaa	gccccacata	gactcttggt	120
aaaaacaatt	ctaactttct	aaaaaaaaaa	aaagccaaca	cacttttttc	tttcttttca	180
aaaagctccc	aggccttttg	gaacagctga	aacaaattca	tatcctgact	aggctctggt	240
tctcttaggt	atttggtgg	tccctctctg	ctgccacttc	tgcacagatg	aggcactgat	300
aatggcctgc	aggtcactca	caatcctagc	tccacatcac	tccatgggtt	gataacctag	360
aaccacgtta	tgatttccat	ttataatgcc	ctaagaacag	ctgaaaagat	ctgtattaaa	420
ttctgcaa	ctttattgag	tgccactatt	tgctgggcac	angctaggcn	ctggattctg	480
ctgggttctt	agaaacctaa	aanggnncc	tnggccggaa	cacccttang	gcgaaatcca	540
cncactgggg	ggcgtactaa	ngggatccaa	ctttgggncca	acttggg		587

<210> 275  
 <211> 588  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(588)

<223> n = A,T,C or G

<400> 275

actttttttt	ttttttttt	tttgccttta	taagagaatt	tttattgtta	attattttacc	60
ttaatagttt	cagaaagagg	aacaaattag	ctcagtccaa	catgattggc	agttggcata	120
ttctagttaa	gcaagtgttc	tgactgctaa	ggattttaatt	tggataattt	taatacttag	180
ccatctaaca	cttcaagcat	aaccacagaat	aaatgcacca	ccttcctttc	actttaatac	240
ccgnacctac	ctcacttcga	tataagaaat	atcattcaat	atgattttcca	gaagggacaa	300
gtttcctgga	gaatacaggc	atganggaca	atgcacaaaa	agaaaaactc	aaaatnaaac	360
tctggatgga	taattactaa	gctaaggga	ccaaaccttc	caatttntaa	agaaattaaa	420
tccggttcca	aatgcctnat	angnctatgt	tnaaaagggt	ctggattaat	accggaaaag	480
gnttgnttnt	tacaggatnc	cccaaccgtt	acgggccctt	ngcccagaat	gggccttaaa	540
anccaaagng	tcttttccgn	ngaggcccca	tttnanaatc	cttntttt		588

<210> 276

<211> 595

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(595)

<223> n = A,T,C or G

<400> 276

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ggaaaggacg	gcctttttta	caaagtgtgc	tggttctact	gggtatctgc	atccttgata	120
cacagaagtt	aactcaagat	ggaccacaga	ctcacatgta	agagctaaaa	taacattcct	180
agaagaaatc	atggaagtaa	atcttcgtga	ccttggatca	ggtaatgggt	actttttttt	240
tttttttttt	ttttttttta	tcagattaat	tttactttat	ttcttcaggc	ctgggggtttt	300
tcgatgactt	caaatttggg	atcttcaaat	ttgaagggtg	gaaatgggtat	tcatgtctgc	360
attaccaaac	atttgctttg	acttaaaaag	ctcctctcca	gctcttgccg	atctctgaac	420
tagcatcaac	aggntcctcc	agatgtctgg	nccttaaat	tggattccct	aatcttggcc	480
acaaagangt	ttcttgata	gggaacaaag	ttcccttatt	naaatgccan	tngtngaacc	540
nccaatgttc	cttcncaaaa	ngggcttaaa	cgggttacct	aattgacaaa	ggaaa	595

<210> 277

<211> 597

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(597)

<223> n = A,T,C or G

<400> 277

ggtactgttc	ctggtggccg	agtggagact	ggtgttctca	aaccgggtat	ggtgggtcacc	60
tttgtctcag	tcaacgttac	aacggaagta	aaatctgtcg	aaatgcacca	tgaagctttg	120
agtgaagctc	ttcctgggga	caatgtgggc	ttcaatgtca	agaatgtgtc	tgtcaaggat	180
gttcgtcgtg	gcaacgttgc	tggtgacagc	aaaaatgacc	caccaatgga	agcagctggc	240
ttcactgttc	aggtgattat	cctgaaccat	ccaggccaaa	taagcgccgg	ctatgccctt	300
gtattggatt	gccacacggc	tcacattgca	tgcaagtttg	ctgagctgaa	ggaaaagatt	360

gatcgccgtt	ctggtaaaaa	gcttgggaaga	tggccctaaa	ttcttgaagt	ctgggtgatgc	420
tgccattggt	tgatatgggt	cctgggaagc	ccatgtgtgt	tgaaagcttc	ttaaactatc	480
cacctttggg	tcgctttgct	ggtcengatt	tgagacacac	catttccggn	gggtggcaat	540
caaaccattg	ggccaanaaa	gnttntggac	ttgcaagggg	nccaaatatt	ncccaaa	597

&lt;210&gt; 278

&lt;211&gt; 595

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (595)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 278

ggtacttttt	tttttttttt	tttttttttt	ttagttttatt	aaaatactga	gtttttatttc	60
acatgtatat	ttttgtctcc	ccaccatttc	catgtctgac	caccgctact	actatgtcct	120
atcataacat	tccatacata	cttaaaaacca	agcaaagggt	ggagttccat	ctttaaaaaac	180
taaacaggca	ttttggacaa	cacattcttg	gcaatagaac	ctggacaaca	tttatcaaac	240
acggtaggga	aagttctcac	tctgcattat	aaaaaggaca	gccagatata	aactgtttaca	300
gaaatgaaat	aagacggaaa	attttttaac	aaattgntta	aactattttc	ttaaagagac	360
ttcctccact	gccagagata	ttgaatagcc	tcttggnacg	tcattccgga	aacaattctt	420
ccataattga	tgaatttggt	tttcaacttt	gggaagagaa	cccccttttc	tataacttggg	480
tgcattttgc	ttaaaggctt	ctacaaacta	gggcctttgg	gggtttaaga	gttttccngg	540
gtcttgaagg	ntcttggcct	ttgaacttgg	ggtnaaaaang	gttngncttt	tccat	595

&lt;210&gt; 279

&lt;211&gt; 586

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (586)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 279

ggtacgcggg	gagatacggt	cgtcagcttg	ctcctttctg	cccgtggacg	ccgccgaaga	60
agcatcggtt	aagtctctct	tcacctgccc	gtcatgtcta	agtcagagtc	tcctaaagag	120
cccgaacagc	tgaggaagcc	cttcattgga	gggttgagct	ttgaaacaac	tgatgagagc	180
ctgaggagcc	attttgagca	atggggaacg	ctcacggact	gtgtggtaat	gagagatcca	240
aacaccaagc	gctccagggg	ctttgggttt	gtcacatatg	ccactgtgga	ggaggtggat	300
gcggctatga	atgcaaggcc	acacaagggt	gatggaagaa	ttgtggaacc	aaagagagct	360
gtctccagag	aagattctca	aagaccaggt	gcccacttaa	ctgtgaaaaa	agatatttgg	420
tggtggcatt	naagaagacc	ttgaagaaca	tcaccttaaga	gattattttg	acagtatgga	480
aaattgaatg	attgaaatca	tgacttgacc	aagcatggcc	aaaaaagggc	tttgctttga	540
accttgagac	atgattcngg	ataaaaatgcn	tcnaatnctt	ntggga		586

&lt;210&gt; 280

&lt;211&gt; 612

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(612)  
 <223> n = A,T,C or G

<400> 280  
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 gtcataaagg ccatgggggtt ggcttgaaac cagctttggg aggttcgatt ccttcctttt 120  
 ttgtctaat tttatgtata cgggttcttc aaatgtgtgg taggggtggg ggcatacata 180  
 tagccactcc aggtttatgg agggttcttc tactattagg acttttcgct tnaaaacgaa 240  
 ggcttntcaa atcatgaaaa ttattaatat tactgctgtt anaaaaatga atgagcctac 300  
 anatgatagg atgtttcatg gggngtatgc atcgggggtaa tccnaataac gtcggggcat 360  
 tccggatagg cccaaaaang tttntgggaa aaaaagttnn atttaccctt attaaattta 420  
 tnnnnaaaag ggattttgcc taagggtggg ctaagggggg ancccngaaa attgggggaa 480  
 atcangnaat gaaacccctt ntgatgggna aaaacagctc ctnttggttg ggccttatng 540  
 ggaanngggc ttcaacttan naccttnggc ggnaaaaccc ttangnggaa ttnnnnncaa 600  
 ntgggggggg tn 612

<210> 281  
 <211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(593)  
 <223> n = A,T,C or G

<400> 281  
 acgctgcttc ttcagagcaa tacgccgccg tttgtgctgc aggacacgtg gagtaacaag 60  
 acgctgaatc ttgggtgctt tggctcctagg tttcttacct tctttattta agggctttct 120  
 tacaacatac tggcggacat catcttcttt agagagattg aaaagtttgc ggattctgct 180  
 agctcttttg gggcccaggc ggcgaggcac tgtagtatca gtcagtccag gaataccctt 240  
 ctctcctttt tttacaataa ccaagttgag aacgctcaga tttgcatcca caatgcaacc 300  
 acgaactgat tttctctttc tttctcagtt ctcttgggtc tgtaacagga atgcccctta 360  
 ctcaatanca ggcggacacg ggcatgggtc aagacacctt gcttcatggg gaaaccttgg 420  
 ttgncgttcc accactggat tcggaccaca taaacctttc attctttnaac caaacgtaac 480  
 ancaactttt gngggccata cncctttata naaagtccgg ggganaagtn ttttgcagga 540  
 caagcctgta acnaatagtn aaatcccgga tttggattcc taancctttt ccn 593

<210> 282  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 282  
 ggtacaattc aagaaactaa gtatttatgg gcattgaaga aaaaatgttg agataaaatt 60



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gctgtgcaga aaaaagtgtt aatgaagccg acctgactac ttaaccttag agacctgctt 120
tacaagggtg gcccttgatt ggcattctggg aacttggagt tcaggggggct tccaccattc 180
ccagaactga tcaaagtagc ttactatata taaactgtaa aacaatatag tttctcctga 240
acacctgctt tccttctggg agtctggaat tttggtatgt gccaggcaga gactaccttt 300
gtgaccagct cccagtaaaa accccaggca ctgagtcctt aacaagcttt tctgggtgac 360
agtgtttcac aagtgtcgtt acaactgggt gctggggagaa ttaagctcat cctctgtgat 420
tccactggcc gaggattctt ggaagcttgc acttaagttt cccctgactt caccatgg 480
gcttttttcc ttgctgattt ggtttgnatc ctctctgnat aaatcatggc ctgaaccnaa 540
cttgaaaaaa aaannnnnnn nnaaaaaaag gtnccttgccc ggcggccggt naaat 595

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&lt;210&gt; 283

&lt;211&gt; 348

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(348)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 283

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actttttttt tttttttttt tttttttttt ctattttttt ttttttttgg cntnanaggg 60
ggtnanaggg gtgctatagg gtaaatacgg gccctatttc aaagattttt aggggaatta 120
atnttaggg gatgggcagc aaactgtggt ttgctccaca natttcanag cattgacagt 180
agtatacccc cggtcgtgta gcggtgaaag tggtttggtt taaacgtccg ggaattgcat 240
ctgtttttta gcctaattgt gggacagctc atgagtgcaa nacgtnttgt gatgtaatta 300
ttatacgaat gggggcctna atcgggagta cctnggccgn naccacnc 348

```

&lt;210&gt; 284

&lt;211&gt; 563

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(563)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 284

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ggtagccatt aatttgcctc gatatagcag gcttaatggt tctatatttt caaaagtttt 60
taagaatggt ttctaacgta ggagagggaa aacatccacc atcccttttc agaatttaaa 120
tggagggcag taaacattct ttacacccaa aacctatggc agcagttcaa atttgaccaa 180
ggtaaagtga gaatagagat gttctaaaaca cagctaggac tcagcaagtc taacacacta 240
aatcatatg attacatttt aaaagaaaaat gcacaaaaac caaatagaaa ttttgagatt 300
ttttttcatt tgaaggtaat cttaatgcta ttaaattcac aaatgctaatt ttaaataccc 360
aatcctattt atctaaaaca cacattgcaa acacacaaat tatctattct ctccacatgt 420
cagccgcca ttcatatcat ggtttggaaa tgggggagaa atagattncc cttaaactgc 480
aagtcaacan ggggttcttt acagttaact ttagccaaat tcataccaaa taccgggta 540
cctgccengg cggcggttcn aaa 563

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&lt;210&gt; 285

&lt;211&gt; 422

&lt;212&gt; DNA

<213> Homo sapiens

<400> 285

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tcacatttct	gaccttttga	tgtattaata	aagtatggag	aaatatagcc	tcgatcaaac	120
ttcatgcctt	caataatttc	taattcatca	ttcagtggtt	ttccatcctt	tactgtgatg	180
acaccttttc	ttccaacttt	tttcattgca	tcagagatga	tattgccaat	ttctttgtct	240
cggtttgag	aaatcgtagc	aacctgtgca	atttcttcag	gggtgggtcac	aggttttagac	300
tgctttttaa	gttcagcaat	tacagcatca	acagctaaca	tcacacctct	cctgatttcc	360
actggattag	cacctttgct	aatcttctcg	aagccttctt	ggctatagag	cgtgccagta	420
cc						422

<210> 286

<211> 588

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(588)

<223> n = A,T,C or G

<400> 286

actgttctctg	cagggttaagg	caggactgga	actcctccac	agcttgcaca	tagttttcag	60
attcaacact	aacttctccg	agtttaagat	gtgcctgggc	agcataaagc	tgtgcttctt	120
ttgtttcttg	ccttttataa	atgatctttg	ctaaatccag	catatcccag	gcaagctcta	180
ggttcccaat	ctcctcctcc	tcatttttctt	gaagagactt	gttttcaagg	actgaatcat	240
ttggcatttc	ttcgggtctta	tcatttttctt	tatcatcctc	ttctgagcct	tcagtttcat	300
ctatgtttatc	attattttct	accagagatt	catcttctgn	tnntttctcc	ttcttctctt	360
tnccatgca	caccttccaa	ggcgtttcca	acacaccatt	cttcactctg	ccaacttcag	420
aagtggattt	ccatagaaaa	agaangnttn	ttcacactta	ttaactgctc	ttcatacttt	480
ttacctnaaa	gactaactgn	ttcctggaat	gcattggccg	ctgctnggaa	atccccatan	540
cngaagtnt	ggcctaance	aaagtntnta	gttactttcc	catccgac		588

<210> 287

<211> 583

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(583)

<223> n = A,T,C or G

<400> 287

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ctgctgctga	catcttcttc	tttcccttca	cacctctgaa	gcctatgaag	gctttctgag	120
caggcttcag	cctgggtggc	atgtcttggt	caatcacacc	ctgggagact	gcgtcctgaa	180
gtgacagctt	ctggcccgtg	gttgggtgga	tgatgccacc	tgtgcaggcc	tgagcctcca	240
gaagcctctg	accctgatg	ctgtcaacga	tgccccgctc	tataccttct	gtaatggaga	300
ttttctccag	gttttctgtg	tcaaagatgg	ctgcaatggg	gctcgattct	tnccagggtgt	360
ctgaaaaaga	actgctcctt	atggntaaat	tcttgacctg	gatatgggtg	aaatcttact	420
tactgattca	tgtcgggagc	tgctaaaaac	atnatcgttg	caccactggc	catgctgtgn	480

ttggngccac accatttttn angngacatg taacnaattg antaggttag nttccgaacg 540  
 gaccttggcc ggaacaccta agngatcan ncatggggcg tnn 583

<210> 288  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(607)  
 <223> n = A,T,C or G

<400> 288  
 ggtacttttt tttttttttt tttttttggt attttagtttt tatttcataa tcataaactt 60  
 aactctgcaa tccagctagg catgggaggg aacaaggaaa acatggaacc caaagggaac 120  
 tgcagcgaga gcacaaagat tctaggatac tgcgagcaaa tggggtggag ggggtgctctc 180  
 ctgagctaca gaaggaatga tctgggtggt aagataaaac acaagtcaaa cttattcgag 240  
 ttgtccacag tcagcaatgg tgatcttctt gctggtcttg ccattcctgg acccaaagcg 300  
 ctccatggcc ttcacaatat tcatgccttc tttcactttg ccaaacacca catgcttgcc 360  
 atccaaccac tcagtcttgg cagtgcanaa gaaaaactgg gaaccatttg gggttgggtc 420  
 cagcattttg catggaccan aatgccagga cccctatgct ttaaggatga anntcttatn 480  
 ttnaaatttc ttcccataaa nggcttgcca ccaangecat tatngcgngt gaagcaccac 540  
 ctgacccata accctggaat aattntnnga aaaccggacc cttntaccna atcttttttc 600  
 agggggnn 607

<210> 289  
 <211> 591  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(591)  
 <223> n = A,T,C or G

<400> 289  
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 atattccaga agagcgttta taattcattt acaagtgcag tattgcgcta gtaaagtgtta 120  
 cttgacctct tgtataaata atgccgatta agaattagtc ctggaatagt tttcgaattt 180  
 ctaactctgt agatctaaaa cacaattgta aatgggtataa agatgtaaga atcatattgt 240  
 gataaagtca atctcaaaaa tagagaatcc agacccttcc cagataattt aagaactgag 300  
 ttttcttcaa cttaaactatg atggccacac agaaaacagt aaagacactt ttcgatgtga 360  
 tacaactgga taaaactcga gaatatgagt atttagnac caatgnatan acattantgg 420  
 aatttttaaaa ncccttttta tctgaagccg aaaaaaangc ctttttccaa gaattattgn 480  
 gccctaatac tcatcnannc nngaatannt tncnttcccn ggatagnnnn nnntccncc 540  
 tnggaaantg ggcnaantt ntttggtntn aaagggggnc cnttaantcc n 591

<210> 290  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(592)  
 <223> n = A,T,C or G

<400> 290  
 ggacttgga atggttggtc ggaaagcttc cacttttggtc ttgacggcat tcaccctctc 60  
 cagcaccttc tcttggttg ctaccccaaa atcattttcca tcttcaatct tggggatcag 120  
 gtgttggtc catgtaatca ccagaatgca tttctctttg agagtccaga cttctggctt 180  
 aaccagggca agcagggaca ggactttctc attcccaggg agaaatccac acttagggac 240  
 ttctttcttc tctgcttat ctgtttccat ctcacatcc ttgggtggag ggtctgggat 300  
 ggggatgtcc agtggggccc ggaggggaagt caagtcagcc acattgaggg agtcctcttg 360  
 caagagctga ttcaggtata tgattttctg tggcaagaat ctgtagagga attcctcanc 420  
 ctntctggaaa agaactctgtc tgaagacctt cacctgggtg cgggctttcc cgctaagcgc 480  
 accccacacg gtttgggcct gctgntttaa tcttaanct ctggcttccg gntagteccc 540  
 cgggaccttg ccggccggcc ntcaaagggc aattcancna ctggcggccg tn 592

<210> 291  
 <211> 609  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(609)  
 <223> n = A,T,C or G

<400> 291  
 acagtggcat gatctcggct cactgcaacc tctgcctccc gggttcaagc aattctcctg 60  
 cctcagccac ccaagtagct gggactacag gtgcgtgcca ccacgcccag ctaaattttg 120  
 tatttttagt ggagacgggg ttccaccatg ttggccagga tggctcaat ctctgaccc 180  
 tgcgatctgc ccacctcagc ctcccaaagt gctgggatta caggcgtaag ccaccgggac 240  
 tggcctggtt tatgattctt aatagttact tggtttaaat cacatttgat actatccttc 300  
 tgaaaagtct gagacagatc taaaaactac agtcaaaatt atagattaag aggaatgaat 360  
 gcacctatct ggctttaagt tgaagatgaa ttattttctc tgctcatttt ctgcnagcag 420  
 ttatcttaga aagaccccca aaggcttggt attgtaaagc acttgcatga tcacagaatg 480  
 caagcttctg gtaccttcgg ccgtgacacg ctaagggcga attcatcaca attgcggggc 540  
 gtacctatgg atccannctc ggtccaactt ggcggaatca tgggcatact gnttcctggn 600  
 nnaaatgtn 609

<210> 292  
 <211> 568  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(568)  
 <223> n = A,T,C or G

<400> 292  
 actgcccaga aggagttcat aaagaatata aagaagaccc caaaagatgt cacgatggca 60  
 ctattgaatt cagcagcatc gatgcacaca atggtgtggc cccatcaaga cgtggtgatt 120

```

tggaaatact tgggttattgc atgatccaat ggcttactgg ccatcttctt tgggaggata 180
atttgaaaga tcctaaatat gtttagagatt ccaaaattag atacagagaa aatattgcaa 240
gtttgatgga caaatgtttt cctgagaaaa acaaaccagg tgaaattgcc aaatacatgg 300
aaacagtgaa attactagac tacactgaaa aacctcttta tgaaaattta cgtgacattc 360
ttttgcaagg actaaaaact ataggaagta agggatgatg caaaatggac ctcaatgggtg 420
tggaaaatgg angnttgaaa gccaaaacca tnnnnnaaaa ncttagggcg aattccannc 480
actggcgccc gtncctaang atccagcttg gncccaactt ggggtaatca tgggcataac 540
tggtncttgg ggaaaatggg ttcccnnn 568

```

<210> 293  
 <211> 603  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(603)  
 <223> n = A,T,C or G

```

<400> 293
ggtacttttt tttttttttt tttttttttt tttttttctt tttttttttt tttttngcct 60
ttttaaaaaa cttttatttg agnggntntt acaaanattg nngcaatatg aaagtcattt 120
gtttgatana aatatcaagc tgncttgta aacacnctga agtaacccaa aaatntnttt 180
caaagctcac anagcttaaa aagagcnaag attntntgca accagacaaa acctatttnt 240
gcatttccta tttctttctn aaactgnttt gcctaccaa ctttnacgtt taaacatttt 300
caggaaatgc agggatcatt ttgtttggaa ttttaagacc ccccnngaacn cataggtntt 360
tacaaagaaa cttttcccga tcccttaatt gaaaagaacc ntccnaaata taaantttgn 420
aaactccent ttttggccaa ttgatcanaa tgccagaaga natgctaacc naanagccct 480
ttaactgggc tgggattcca taccctaaan ggggtttcaa aactgggttaa ccttnnccca 540
attttaacct tngggaaaag ggnaaaggan ccccggggna aaaataaggt tttgaaaaat 600
aaa 603

```

<210> 294  
 <211> 617  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(617)  
 <223> n = A,T,C or G

```

<400> 294
ggtacgcggg gatcgcttcc tggtcctcgc cccctccgct gtctccctgg agttcttgca 60
agtgcggccag gatgtctcag gctgagtttg agaaagctgc agaggagggt aggcacctta 120
agaccaagcc atcggatgag gagatgctgt tcatctatgg ccactacaaa caagcaactg 180
tgggcgacat aaatacagaa cggcccggga tgttggactt cacgggcaag gccaaagtggg 240
atgcctggaa tgagctgaaa gggacttcca aggaagatgc catgaaagct tacatcaaca 300
aaagtagaag agctaaagaa aaaatacggg atatganaga ctggatttgg ttactgtgcc 360
atgtgtttat cctaaactga gacaatgcct tgtttttttc taataccgtg gatgggtggga 420
attcgggaaa ataaccagtt aaaccagcta ctcaaggctg ctcaccatac ggctctaaca 480
gattaggggc taaaacgatt actgactttc cttgagtagt tttaatctga aatcaattaa 540
aagtggattt tgtacaaaaa aaaaaaaaaa aaaaagtntc gcccggccgg ccntcaaaag 600

```

gcnaattcan ccccttg

617

<210> 295  
 <211> 606  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 295  
 cgaggtactt ttaccatgaa catctctaga ctgtgattat taaatatagt gataatatac 60  
 atgggtttac tgggatattg aaaaataaaa gataatgaac ccaatttagt aaatcaacat 120  
 aaatacaaaa cagagcgaat tagccctcta caactgagct cgtcctgcgt cttgagcttg 180  
 ggttctttct ggaactgtct caaaccttag tgggggaagt gaccttatcc acagattgct 240  
 tttcccagag gttccgcttg ctggatacgt ctctgggtct caagtcagaa ggtttgggag 300  
 caggtgactt gtttccatct ggggttttag ttagccattc attgatgccg ctagaaaccc 360  
 ctaccttcaa gccagcagtt tccttatttg gtgtgcctgc tgcantgggg gatgaaaaca 420  
 cattccttcc tncacatac tcttggatgt tgcgtacctg ccnggcngg ccgttcnaaa 480  
 ggccaattcc acaccactgg cggccgtact aatggatcca aaactcggac cancttggcg 540  
 natcatnggc atactgggtc ctggggnaaa tggattccgt tacattcccc caacttccag 600  
 ccnggg 606

<210> 296  
 <211> 612  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(612)  
 <223> n = A,T,C or G

<400> 296  
 ggtacgcggg gtgccagagg aaatcttaaa gcgcctactt aaagaacagc acctctggga 60  
 tgtagacctg ttggattcaa aagtgatcga aattctggac agccaaactg aaatttacca 120  
 gtatgtccaa aacagtatgg caccctcatcc tgctcgagac tacgttggtt taagaacctg 180  
 gaggactaat ttacccaaag gagcctgtgc ccttttacta acctctgtgg atcacgatcg 240  
 cgcacctgtg gtgggtgtga gggtaaatgt gctctgtcc aggtatttga ttgaacctg 300  
 tgggccagga aaatccaaac tcacctacat gtgcagagtt gacttaaggg gccacatgcc 360  
 anaatgggtcc cgcaggaagg ccgtcaagaa nggctcgacc cggntgggtg ttcaagggaag 420  
 aaacattgtg gtcttgggtg ggaaaaaaaa tcantgggcc aactggngga tgaaagacna 480  
 tgccggaana nctgggcttt ggatgacaac ccctgcatgg gcttttgang ccttaccgcc 540  
 gatccagggt tntnttaaca nggcccgggtg gaatgccnaa nccccgggta ctttggagga 600  
 cccggtnctt gg 612

<210> 297  
 <211> 590  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (590)  
 <223> n = A,T,C or G

<400> 297  
 acgcggggga acacatccaa gcttaagacg gtgaggtcag cttcacattc tcaggaaactc 60  
 tcctttctttg ggccacggaa ttaacccgag caggcatgga ggcctctgct ctcacctcat 120  
 cagcagtgc cagtgtggcc aaagtggcga ggggtggcctc tggctctgcc gtagttttgc 180  
 ccctggccag gattgctaca gttgtgattg gaggagtgtg ggctgtgccc atgggtgctca 240  
 gtgccatggg cttcactgcg gcgggaatcg cctcgtcctc catagcagcc aagatgatgt 300  
 ccgcggcgcc cattgccaat gggggtggaa ttgcctcggg caaccttggtg gctactctgc 360  
 agtcactggg aacaactgga ctcttcngat tgaccaagtt catcctgggc ttcattgggt 420  
 ctgccattgc ggctgcattg cnaggtctac taacttctct cccttgccctt gcaaaaaaaaa 480  
 aaaccttgcc agggaaaaag nccccaancc ttctgaacca accanggggc ccacttttcc 540  
 aaaatacctn gggnggaaaa tncccaattt tgantttcnn aggaaanana 590

<210> 298  
 <211> 590  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (590)  
 <223> n = A,T,C or G

<400> 298  
 ggtactttga gccactctcg catggaaagc agtgtcttta tgcctcgacc tcaagctgtg 60  
 ggctcttcca attatgcttc caccagtgcc ggactgaagt atcctggaag tggggctgac 120  
 cttcctcctc ccaaagagc agctggagac agtggtgagg attcagacga cagtgattat 180  
 gaaaatttga ttgacctac agagccttct aatagtgaat actcacattc aaaggattct 240  
 cgacccatgg cacatcccga cgaggacccc aggaacactc agacctccca gatttaacta 300  
 aacaaaagaa actctccacc tagcactgtt tttcttcatt gcttactgag agggtttttg 360  
 agaacttaat ctgggggggag aactgcttct tcagatcctt aactcccagag aagagaagtc 420  
 cttgtgcaca gaacttggtg gaaccttcat ccgntgtctt tacctttgga tccagtgtgc 480  
 aagtttcatg acngaattcat taagatatca aatggcctaa tttggngcna atcatggtat 540  
 actgggaaaa ttaggcnaat ggaacttntc accgantttg gtctttaaan 590

<210> 299  
 <211> 549  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (549)  
 <223> n = A,T,C or G

<400> 299  
 cgaggtacaa agatctgaca tgtcacccag ggacccattt caccactgct tctgtttggc 60  
 cgccagtctt ttgtctctct cttcagcaat ggtgaggcgg atacccttct ctcgggggaag 120  
 agaaatccat ggtttgttgc ccttgccaat aacaaaaatg ttggaaagtc gagtggcaaa 180

gctgttgcca	ttggcatcct	tcacgtgaac	cacgtcaaaa	gatccagggt	gcctctctct	240
gttgggtgatc	acaccaattc	ttcctagggt	agcacctcca	gtcaccatac	acagggttacc	300
agtgtcgaac	ttgatgaaat	cagtaatctt	gccagtctct	aaatcaatct	gaatgggtatc	360
attcaccttg	atgaggggat	cggggtaacg	gatgggtgcg	gcatcatgag	tcaccagatg	420
anggattcct	tttgtgcca	caaagatctt	tctactttgc	ancacacact	ggcggncgta	480
ctagtggatc	cacttcgnac	caacttggcg	tatcatgggc	tnactggtnc	cgggggaaat	540
ggtatccnn						549

&lt;210&gt; 300

&lt;211&gt; 591

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(591)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 300

actccagcct	gggcgacaga	gcaagactcc	acctcaaaaa	agaaatattt	agcaaatatt	60
aaaggacaag	aggggaatatt	tgtttaaaaa	attataatgc	acgttagatg	aaaagtaata	120
ggatgagatg	gttgttgctg	aaatagcact	tgctatataa	attcaaact	tccttttcaa	180
attcagcttc	tcagaggttt	gacttcagat	gcttgagcac	tttcaacatt	atctttgcct	240
ttatccttcn	ttatgcggat	aaacacaact	gctaaaatta	taccattgat	tttggaaaact	300
tcccagtcgt	tttghtaagct	tcactgccga	gggaaaatgt	aaaatgggga	ccccgaaata	360
aagtgtgat	catcatcaag	tagcctcgaa	aatgagactt	tcaggtgcac	tgaaggggat	420
ggcagaagaa	caagccccgt	gtagtccttg	ctagcctggg	aagggttgga	ttcacatcct	480
taaggatcan	gtggactttg	acnccgaact	taaaggaaga	acccccctatt	ntggggccac	540
cacttgacct	tgggcccga	cacccttaag	gcgaattcca	cacactgggg	g	591

&lt;210&gt; 301

&lt;211&gt; 655

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(655)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 301

cgagggtactc	tttaaaaagg	gactgcaggg	ctgggtgtag	tggctcacac	ctgtaatccc	60
agcacttttg	gaggccaagg	cagggtgggtc	acttgaggcc	aggagtttga	gaccagcctg	120
accaacatgg	caaaacccca	tctctactaa	aatacaaaaa	ttagctgggc	atgatgggtg	180
actcctgtaa	tcccagctac	ttggtaggct	gaagcatgag	aattgcttaa	acctgggagg	240
cagaggttgc	agtaagccaa	gatcatgcc	ctgcactcca	gcctgggcaa	cagagtaaga	300
ctctgtctta	ataaataaat	aagaaaataa	aacggaactg	cagtgcctaac	agtaatttat	360
acatttttaa	atgttctgag	tatgttttga	ctgggctagt	gtaacaatat	actaccctga	420
aaagtgcagt	tttgattgtt	ggtgggtgtc	ttgggtcang	aaaagtgaac	tgtgccaaaga	480
agtatttttc	aatgacatga	atggattnct	gttaatgcaa	ttgactgaga	aaatgnctt	540
acgctttctt	aactgcaaaa	agagntttgt	ccacatcana	attgttgaaa	ctggngctgt	600
ttctgttgcc	tgggatctga	tgactgggat	ttcctcttgg	acaaaanacc	tgatn	655



<210> 302  
 <211> 513  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(513)  
 <223> n = A,T,C or G

<400> 302  
 actcgtcttg gtgagagcgt gagctgctga gatttggggag tctgcgctag gcccgtttgg 60  
 agttctgagc cgatggaaga gttcactcat gtttgcaccc gcggtgatgc gtgcttttcg 120  
 caagaacaag actctcggct atggagtccc catgttgatg gatcctgagc ttgaaaaaaa 180  
 actgaaagag aataaaatat ctttagagtc ggaatatgag aaaatcaaag actccaagtt 240  
 tgatgactgg aagaatatcc gaggacccag gccttgggaa gatcctgacc tcctccaagg 300  
 aagaaatcca gaaagcctta agactaagac aacttgactc tgctgatttt tttttccttt 360  
 ttttttttta aataaaaata ctattaactg gacttcctaa tatatacttc tatcaagtgg 420  
 aaaggaaatt ccaggcccat ggaaacttgg atatgggtaa attgatgacc aataatcttc 480  
 acttaaagnc atgtcctttg gccgcgaaca cgc 513

<210> 303  
 <211> 610  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(610)  
 <223> n = A,T,C or G

<400> 303  
 acgcggggct tgcagagccg gctccggagg agacgcacgc agctgacttt gtctttctccg 60  
 cacgactgtt acagaggtct ccagagcctt ctctctcctg tgcaaaatgg caactcttaa 120  
 ggaaaaactc attgcaccag ttgcggaaga agaggcanca gttccaaaca ataagatcac 180  
 tgtagtgggt gttggacaag tnggtatggn gtgtgctatc agcattcttg gaaagtctct 240  
 ggctgatgaa cttgctcttg tggatgtttt ggaagataag cttaaaggag aaatgatgga 300  
 tctgcagcnt ggggagctta tttcttcana caccttnaaa ttgtgggcag atnaagatta 360  
 ttctgtgacc cgtcaattct tanattngta gttggtnact gcatggaatt cngtcagcaa 420  
 gaaangggaa aantctngtt caatttggtg gnataagaan tggttaatgg tcttcaaatt 480  
 cnttattcct tcagancggc caagtacctn ggccgnganc atgcctaagg gctaattcna 540  
 ctcantggng gccgntctan ntggattcca ncttggtacc aancttgng ntattnatgt 600  
 caatanctgg 610

<210> 304  
 <211> 596  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(596)  
 <223> n = A,T,C or G

```

<400> 304
ggtacctgga attatctaatt tggccagagg tggcgcccgga cccatcagtt cgaaatgtag      60
aagtaataga gttggcaaaa gaatggaccc cagcaggaaa agcaaagcaa gagaattctg      120
ctaagaagtt ttattctgaa tctgaggaag aggaggactc ttctgatagt agcagtgaca      180
gtgagagtga atctggaaag tgaaaagtgg agaacaaggc cgaaagtggg ggaggaagga      240
gacagcaatg aggacagcag tgangactcc tncagtgagc angacagtga gagtggacgg      300
gagtcaggcc tagaaaacan angaacagcc nagangaact caaaagccaa agggaaaaag      360
tgattctgaa gatggggaga aggaaaatga aaaatctaaa acttcagatt cttcaaatga      420
cgaatctagt tcaattanaa gacagttctt ccgattcttg aatcagaatc agaacctgaa      480
agtgaatctt gaatncngaa cagtcgctta ggagaaagaa agaaaccaag caggattgac      540
tccttttnc aagntgttcc ttctaaactg gatgatttaa ccngntccct cagtgn      596

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<210> 305
<211> 629
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(629)
<223> n = A,T,C or G

```

```

<400> 305
ggtactttnt tttttttttt tttttttttt tttttttttt tggggattta ntttttattt      60
cataatcata aacttaactn tgcaatccan ctaggcattg gagggaaaca ggaaaacatg      120
gaacccaaag ggaactgcag cgagagcnca aanattntng gatactgcga gcaaatgggg      180
nggaggggng cnttcctgag ctacaaaagg aatgatctgg tggntaaaat aaaacacaag      240
tcaaacttat tnnagttgtc cacagncagc aatggngatc ttcttgctgg ncttgccatt      300
cctggaccca aagecgtcca tggcctccac aanattcatg ccttctttna ctttgccaaa      360
caccacatgc ttgccatcca accactcant cttgggnagng cagatgaaaa actgggaacc      420
atTTTTnttg ggtccnecat ttccatggca aaangccang acccnttgct ttaagaagaa      480
aatctcatct tcaaattctn ccctaaanga cttgccncan gcctnttggg tngnaagcnc      540
ccctgncca taacctgga tatttttgaa agaggancct ntacnaacnt ttttccnggt      600
aanaaaaaat ttttntttg acctnccca                                     629

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```

<210> 306
<211> 643
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(643)
<223> n = A,T,C or G

```

```

<400> 306
acagggagga atttgaagta gatagaaacc gacctggatt actccggtct gaactcagat      60
cacgtaggac tttaatcggt gaacaaacga acctttaata gcggctgcac catcgggatg      120
tcctgatccc ccgcgtacat ttcttgtag actctgttaa ttctctgcag ctctgggttg      180
gttctggagc agatgatctc aatgagagag tcctcgctcg ttcccagccc cttcatggaa      240
gcttttatct cagaagcgtc atactgagca ggtgtnttca ataggcccaa aatcacgcgc      300
tccaggtggc cagataaggc tgacttcaat gctgatgcaa gntccttttt ggtccttctc      360

```

tggtaggcga	aggnaatatc	ctgtctctgt	ncattgcttg	cggnctgggca	aaatggtgac	420
aatggtgacc	tcattccacac	ctttggtctt	tgatggntgg	ntcaatgttc	aaagcatccg	480
ctcagcatca	aaantaagta	tangctttgc	agacccatat	gcacttgggg	gngnngagng	540
acaccctcca	actgaacttg	ccaggatttn	tgaaagtaan	anttttaaga	acttgccgnc	600
cccanactaa	acnnccaatc	tagcccnntn	cctaacggcc	aag		643

<210> 307  
 <211> 643  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(643)  
 <223> n = A,T,C or G

<400> 307						
cgaggtactt	tttttttttt	ttttttttnt	ttnttnttnn	tttggggatt	nantttttat	60
ttcataatca	taaacttaac	tctgcaatcc	aactaggcat	gggaggggaa	aaggaaaaca	120
tggaacccaa	agggaaactgc	ancgagagca	caaanattct	nggatactgc	gancaaatgg	180
ggngggagggg	tgctctcctn	agctacaaaa	ggaatgatct	ggtggttaan	ataaaacaca	240
agtcaaactt	attcnagttn	tccacagnca	gcaaagggga	ncttcttgnt	gggcttgcca	300
ttcctggacc	caaaacgctc	catggntctc	caaaatttat	gccttttttt	actttgccaa	360
anaccacatg	ctttgccttc	caccnctcan	tttttgnggg	ggnaaataaa	aanccgggaa	420
cnnttggtgt	tggnccnaca	ttttccnttg	gnaaaaaacc	ncgaccctt	tnnttaagaa	480
naaaatttta	nttttaaaat	tttcccttaa	aaaggactgg	cccnaaggcn	ttttgggggn	540
gaagcccncc	ntcccnnaaa	cctggaaaaa	ttttggaagc	nggacccttt	accaaattct	600
tnctctggtt	aaaaaaaaat	tttttttttt	gacctttccc	aan		643

<210> 308  
 <211> 653  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(653)  
 <223> n = A,T,C or G

<400> 308						
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agatccatct	ggagcttact	ttgcctggaa	agctacagca	atgggaaaga	actatgtgaa	180
tggaagact	ttccttgaga	aaagatatata	tgaagatctg	gaacttgaag	atgccattca	240
tacagccatc	ttaaccctaa	aggaaagctt	tgaagggcaa	atgacagagg	ataacataga	300
agttggaatc	tgcaatgaag	ctggatttag	gaggcttact	ccaactgaag	ttaaggatta	360
cttggtgccc	atagcataac	aatgaaaagt	actgaaaaat	ccagaatttc	agataatcta	420
tctacttaaa	catgttttaa	agatgggttg	tttgcaagac	tttttgcata	cttanttcta	480
catgaattaa	atcactgggt	tnaaatgaca	cttattaatc	ctaataactg	gtnaaccenc	540
aaaaaaaaaa	aaaaaaaaaa	ntacttnccc	ggcgccgctc	gaanggcaat	tcacncttgg	600
cggccgtcta	tggatccacc	cggnccacct	gggnaacagg	cnactgggtc	tgg	653

<210> 309

<211> 649  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(649)  
 <223> n = A,T,C or G

<400> 309

acttgcaaaa	gcacttgaag	tcattaaacc	agctcatata	ctgcaagaga	aagaagaaca	60
gcatcagttg	gctgtcactg	cataccttaa	aaattcacga	aaagagcacc	agcggatcct	120
ggctcgccgc	cagacaattg	aggagagaaa	agagcgccct	gagagtctga	atattcagcg	180
tgagaaagaa	gaattggaac	agaggggaagc	tgaactccan	aaagtgcgga	aggctgagga	240
agagaggctg	cgccagggaag	caaaggagag	agagaaggag	cgtatcttac	aggaacatga	300
acaaatcaaa	aagaaaactg	tccgagagcg	tttggagcag	atcaagaaaa	cagaactggg	360
tgccaaagca	ttcaaagata	ttgatattga	agaccttgag	gaaatggatc	cagattttat	420
catggctnaa	caggggtgaac	aactggagaa	agaaaagaaa	gaacttcaga	acccttaaga	480
atcagaaaag	aagattgctn	ttttgaagac	ccacctttgg	aaaaattcct	ttgttaagag	540
cctttcgagg	acagaaaatt	aagacatggt	ctggggngcc	cccaggagga	aagaattctc	600
ctgcccttga	cgtgaaaggt	nttgcataaa	atcatgtccn	atcttgaga		649

<210> 310  
 <211> 319  
 <212> DNA  
 <213> Homo sapiens

<400> 310

cgagggtacta	gccggacttg	gattttcttg	aaagatttca	gttgaggaac	gggaacaaag	60
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tccttgagct	gagccttgag	gtccgagttc	atctccagct	ccagaagagc	ctgggagatg	180
ccggactcga	actcgtccgg	cttctcgcca	ttgggcttca	cgatcttggc	gctcgaactg	240
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ctgccggggcg	ggcgctcga					319

<210> 311  
 <211> 646  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(646)  
 <223> n = A,T,C or G

<400> 311

cgagggtactg	atgcaacagt	tgggtagcca	atctgcagac	agacactggc	aacattgcgg	60
acaccctcca	ggaagcgaga	atgcagagtt	tcctctgtga	tatcaagcac	ttcgggggtt	120
tagatgctgc	cattgtcgaa	cacctgctgg	atgaccagcc	caaaggagaa	gggggagatg	180
ttgagcatgt	tcagcagcgt	ggcttcgctg	gctcccactt	tgtctccagt	cttgatcaag	240
ctgcacatca	ctcangattt	caatgggtgcc	cctggagatt	ttagtggtga	tacctaaagc	300
ctggaaaaaa	ggaggtcttn	tntggcccca	aaccaatgtt	ctgggctggc	caatgacttc	360
acatggggca	atggcaccaa	caccggcgaga	acttgnaccc	tattgccaca	acatgtcctt	420

atctnaatga	nggncttctt	tgtgaaaaca	aaccccatc	cccggaatta	agnacaantt	480
cttcaaactt	gggtggnttc	aagggcctcg	atngcctgcc	catatngggg	ttttgccata	540
aaacacaacn	ttccnnaaag	gaatccgant	nttgttttgt	tggancccat	ttttgttccc	600
aagaaaattn	ggtaatatcc	aaattgggga	attaggaaaa	tgggnt		646

&lt;210&gt; 312

&lt;211&gt; 622

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(622)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 312

cgaggtactt	ttgtgagagg	gttcaatggg	agagctttaa	tgcagatgag	acttgaagct	60
tctgaagaag	atctaagtct	tgatgaggtt	attcaaactc	aaatcttgaa	tgcataatga	120
tgataggcca	tggtcttcaa	aaacgtggta	cttttaatag	caacagggtt	tcacatggt	180
ggccaggctg	gtctcaaatt	cctgacctca	agtgatctgc	ccacttaagt	gctgggatta	240
caggcatgag	ccacaacatc	tggccagaaa	tattttttct	tttctttctc	tttctctctc	300
tctttttttt	tttttttttt	tttggagctc	gctctgtccc	ccagctgcaa	tgcaatgggg	360
caatcttaac	ttactgnaac	ctcccccttc	aggtcnaaag	aatctttgng	ctacctccta	420
natntnggaa	tacaagggcg	tccccacct	actaattttg	ntttttaaga	aaaggagggt	480
ttancatggt	ggtnngntga	tcccaacctc	cgaccttaan	gancctccgc	ctaatttcca	540
aaggctggat	nttggctgan	cccacccenc	ttaacccaaa	ttnaaattct	ttntcctgc	600
cgggggctgt	aaagggaatc	aa				622

&lt;210&gt; 313

&lt;211&gt; 674

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(674)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 313

nggacttgaa	atcattgaag	ttctgcaaaa	aggagatgga	natgcacaca	gaaagaaaga	60
tacagaggtc	cgcagacggg	agctcctaga	atccatttct	ccagctttgt	taanctacct	120
gentgaacac	gcccagacg	tggtgctaga	taagtcagcg	tgtgngtagg	tntctgncat	180
tccngggaac	agacnaattn	gaccatnagg	naacctgagc	ttnccaaagt	ncgcaaggct	240
gaagaagana	ggctnctcca	ggaagccnac	gagaaagana	aangagccgt	attttacncg	300
aacatgaaca	aatcaaaaaa	naaaactgtc	cgaaaaccgt	ttggagcaaa	ncaanaaaaa	360
cagnacctgg	gngcccaaaag	cattcnaana	tatttggtat	tancncaccn	tgatggattc	420
naaacnttat	ttttntcttg	cncggctggg	cgccccggct	ngngnaaaga	aaagaacttt	480
netaccnctc	ccgaatcaag	aaaagaanat	ggcttttttn	taaaanncaa	cccttgggaa	540
aaaattcttt	gtttaananc	cctccaangc	ccgggaaatt	aattcatgct	ttgtgtgngc	600
gaccnannaa	aaaanaanan	atccttctct	ccccttaann	gaaaagggcc	ttncaaaaaa	660
tgattgccca	agnc					674

&lt;210&gt; 314

<211> 646  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(646)  
 <223> n = A,T,C or G

<400> 314

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gctggagtgc	agtgttgcca	tctcagctca	ttgcaacctc	tgccctcccag	gttcaagtga	120
ttctcctgcc	tnagcctcct	gagtagttgg	gactacaggc	acatgccacc	atgcctggct	180
aatttttttg	cattttttaag	tanagacagg	gtttcatcat	gttggccagg	caggtntcaa	240
actcctgacc	tcaagtgatc	cacctgtctc	agcctcccaa	agtgctggga	ttacaggcat	300
gagccactgn	acccggccta	aaaatgatta	cttcttataa	aaaggatttc	ttccccctca	360
caacacttan	cttccttttt	ctttcctggg	aactatgggt	ntggngnccg	cataaggatc	420
taccttncnc	aagctggaca	ntgggggttg	ctncttgang	gnaactcagg	ccanatacng	480
accctggggg	gaacnctaaa	cttacttggg	tanaaccggg	gctaacattt	ctgcttgnga	540
ngttgattcc	ccncaaattt	ttaaaagggn	tttcatggcc	cttagggcaa	ccattttaca	600
aagatgggnc	acatggncct	ggccgnaacc	cctangngaa	ttcnch		646

<210> 315  
 <211> 666  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(666)  
 <223> n = A,T,C or G

<400> 315

acagtctttg	gatatttagg	aaggggatgg	ggagaaagtc	agttctcaga	acaaattagt	60
cagcttcagt	ctcgtcagca	gggtctttgg	attctttggt	cttcgcact	tcttcaatgt	120
gcttatcctt	ctctcgcaaa	cgttccagtt	tggcagccat	ttgtgectct	cggttctctt	180
tattagcttc	cattttgtgg	gtcagtttct	cttctgccat	tttactgaag	ttgntgttct	240
cttctattgc	cttctgaagc	acttctttct	cgtgctctcg	tttctcance	agctgcttca	300
agaccttagc	ttcatgggac	ttgcgtcttt	cttctgcagc	ttctaatttc	ttctgaattt	360
cctccagggg	aagaccttct	tctttggaag	ggaaaggggg	aattctggaa	ccagattctt	420
ttgacccaag	gctgaaaatc	agcttaaaaag	cctggccttg	angcaccnt	tttcagntct	480
ttcacctgga	tatcntaaaag	aagccctngt	gattnaaaac	aagccnaccg	gcantnnatt	540
ntgncaanan	cnnggataan	gnaatccctg	tnaantccna	cccctnacc	cattttcccg	600
ggaccttgge	ngnaaccctt	tanggngaag	tcnncnctn	ggcgcccgta	ctaangggac	660
ccaccg						666

<210> 316  
 <211> 656  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(656)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 316

actcttggtt	tgtcaatggg	actttccagc	aatccaccca	agagctcttt	atccccaaaca	60
tcactgtgaa	taatagtggg	tcctatacgt	gccaagccca	taactcagac	actggcctca	120
ataggaccac	agtcacgacg	atcacagtct	atgcagagcc	acccaaaccc	ttcatcacca	180
gcaacaactc	caaccccggtg	gaggatgagg	atgctgtagc	cttaacctgt	gaacctgaga	240
ttcagaacac	aacctactgt	gggtgggttaa	ataatcagag	ccttcccgcnc	aagtcccagg	300
cttgcagctg	gcnatgacc	aacaggaccc	tnactctact	tagtgtcaca	aggaatgatg	360
ganggaccct	atgaagtgtg	gaaaccagaa	ccaattaagt	ggtgnccaca	cganccaggc	420
attcttgaat	ggcccttatg	gnccanaaga	acccaccatt	tcccctnata	cacctaatnc	480
cgtccagggg	gaaccttaag	ctntctggca	tgcaancctt	aaccactggc	aggattcttg	540
gnttaatgaa	gggaacattc	nnacccnccc	agaagttttt	attttcaact	tacttggaan	600
aacgggggct	ntttactgcc	ngccataact	taacnggggc	cnnancggac	ttcgnn	656

&lt;210&gt; 317

&lt;211&gt; 636

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(636)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 317

actttttttt	tttttttttt	tttttttttt	tttgnagtca	gctattttaat	taggttctta	60
agacatttag	aacaccaatt	tgngaggata	aattccattc	gtcagagcaa	acacagatcg	120
caggtagccc	tggagctgag	gaatagcttt	gatttttggt	aaaattttgtg	agtccacagc	180
tttctgatca	atcttgcgct	gtcccgtaat	ctcatatttc	cctttttctg	ggncgaaaan	240
cttacctttc	tggggnttgg	gcttncgcag	cttctctctn	ttgaagtaag	catnagtaan	300
aagntttggg	antttttacan	tgntgatann	cattttggnt	gaagnggnan	tgacnaattt	360
ctgggggggt	cttcgtaaag	gaactcnant	gaggcccaaag	ggnccgccn	agtaataagg	420
ccctnnanc	tggttangga	aacccccnt	tggcctgggg	ggncangag	gntgatccaa	480
atggccccc	ggaaaagcng	gntcaanttt	tnacggctnc	tnaaagggtt	ttgccnggnt	540
taanccttt	nn	ggncnttttc	agnggaaana	cngctttgn	nantntaccc	600
ggcggaaacc	nttagggna	attncncnct	gggggg		ccgntcctc	636

&lt;210&gt; 318

&lt;211&gt; 654

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(654)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 318

cgaggtagc	ggggcctttc	tgcccggtga	cgccgccgaa	gaagcatcgt	taaagtctct	60
cttcacccctg	ccgtcatgtc	taagtcagag	tctcctaaag	agcccgaaca	gctgaggaag	120
ctcttcattg	gagggttgag	ctttgaaaca	actgatgaga	gcctgaggag	ccattttgag	180

caatggggaa	cgctcacgga	ctgtgtggta	atgagagatc	caaacaccaa	gcgctncagg	240
ggctttgggt	ttgtcacata	tgccactgtg	gaagaggtgg	atgcagctat	gaatgcaagg	300
ncacacaagg	tggtatggaag	aattgtggaa	ccaaagaaaa	ctgtcttcag	agaagattct	360
taaagaccan	gtgcccactt	aactgtgaaa	aagatatttg	gtggtggcat	taaagaagac	420
actgaagaac	atcactaaga	gantattttg	aacagtatgg	anaaaattgn	agngattgaa	480
atnatgactg	ccnangcagt	ggcancaaan	ggggctttgg	ctttnnacct	ttgacnacca	540
tgactcnngg	ataaaatggn	attcnnaaat	ccctcntgng	aatggccnca	ctgggaagtt	600
ngaaancctn	ncaacnagaa	agggtncgnt	tnntccncca	aangcnaang	tttc	654

&lt;210&gt; 319

&lt;211&gt; 659

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(659)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 319

acgcggggaa	gccaaactcag	actcagccaa	cagagattgt	tgatttgccct	cttaagcaag	60
agattcattg	cagctcagca	tggctcagac	cagctcatac	ttcatgctga	tctcctgcct	120
gatgtttctg	tctcagagcc	aaggccaaga	ggcccagaca	gagttgcccc	aggcccggat	180
cagctgccc	gaaggcacca	atgcctatcg	ctcctactgc	tactacttta	atgaaagacc	240
gtgagacctg	ggttgatgca	anatctctat	tgncagaaca	tgaattnngg	caacctgggtg	300
tctgtgctna	cccangccca	aggtgccctt	ggggcctcac	tgattaanga	aantggcact	360
gatgacttca	atggctggaa	tggccttcat	gaccccnaaa	agaacccgc	gnttgactg	420
gacagtgggt	ccctngntct	cttacaagtc	tggggcaatt	gganccccaa	nccatgntaa	480
ttcnggctac	tggggtgagc	nnacctcagc	ccaggatttn	gaantggaan	gcctgncttg	540
ggaanacaag	ttcttctttn	gctngcaagt	tcaaaaccta	atgcagctgg	aaaatcatnt	600
ctanaactga	tcagcattcn	accgnttcaa	attaaccggc	ctttttcant	tanttaccg	659

&lt;210&gt; 320

&lt;211&gt; 664

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(664)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 320

ggtactctgc	cttttagggag	atgaggtaag	acatatacat	agatggcttt	tactagccaa	60
ggcaatgtaa	atggactaag	attctcatgt	gacttgagggt	tatctgatga	atttattctc	120
ttcaaaacca	cctactttta	gagggcatgt	ttaacccttc	tctttattta	aggagggaga	180
gaaaaacaca	tgtaaccaga	attcagagtg	ggttactcaa	cctaagagaa	catacggagt	240
tctctttggg	aaaacgacaa	gactacagtg	ttcacttcgc	accatgaagt	ggcactcctg	300
ntatggctgc	agantcctct	tacttcttat	gaaaggatgc	atctgattct	gaaattactg	360
atatattcga	tcagttaggg	atgntttaaa	aagngaaaac	caatgccaca	catacacttt	420
ctagctttct	gaaaatnacc	cgacacattn	ccnaaaatng	agaatttacc	ctattacttt	480
tagagaaatt	tccataatat	tcttgggtaa	agaanccng	ttgggcatat	tnccaatttt	540
cagnggnent	ggttttatgc	ccnaganccc	aataggntcc	cccatTTTTT	aaggctTTTT	600



ccacngacga ttttttaaan cnttctnnan tgggggaaga ataatcttaa aagtnngctt 660  
atnt 664

<210> 321  
<211> 666  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc\_feature  
<222> (1)...(666)  
<223> n = A,T,C or G

<400> 321  
cgaggtacag tattacagtc agccacagaa gctgtgttgg gggacaagac ccaatccttc 60  
cccacaccag gcaaagcagt attggacatg agttggcatg tggctgggcc cacgtcctta 120  
tccccaggc ctgaggggag accaccttct gatgataacc aacccttagc taccactctg 180  
tattcatcag gggaggggta taaacccgc atgcaagaag aacccttgcc cccagtgtca 240  
aatgggatgg ggatgctaga gttatagtaa aggggaaacc ctatgtaagc tgntaacaga 300  
gttcacaggg gtagggataa cccctgntct tcagctncca aatgngctca cttccagct 360  
tcttcatccg tcatcaatgc tggcaaagtt tccctnaact gnggccaggt tttcacgcat 420  
gggtggctgc acctgggtca aaaagggtggn attggccntt aaggaattag caatcatntg 480  
ctgggtggga ttccagtgtg taaggaactt anccaactgc atggnttgnt tgtgcanctg 540  
cttgatggng acaagtttnt gcaccanctn aaggaagggtg gaagcatggg gctcaacctn 600  
gataagttca tatacttggg gcncccttgc ttgggatctg catntttaca agnnttatcn 660  
tgcan 666

<210> 322  
<211> 631  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc\_feature  
<222> (1)...(631)  
<223> n = A,T,C or G

<400> 322  
accggaagg aagctcccat tcaaaggaaa tttatcttaa gatactgtaa atgatactaa 60  
ttttttgtcc atttgaaata tataagttgt gctataacaa atcatcctgt caagtgtaac 120  
cactgtccac gtagttgaac ttctgggac aagaaagtct atttaaattg attcccatca 180  
taactgggtg ggtacatcta actcaactgt gaaaagacac atcacacaat caccttgctg 240  
ctgattacac ggcctggggg ctctgccttc tccccttacc ctcccggtc cacccttcct 300  
gcaacaacag ccctntacct ggggggcttg ntagaagaga tgtgaagggt tcaagggtcg 360  
aacctgtggg actactgcta ggtgtgtggg gnggttcgcc tgcacccctg gggtctttta 420  
gncttaaagt gatgccctt tccaaccatt attctggncc cacacttctc actccggcct 480  
tggncnanca taaatgnacc ccttcacttc ctntgagaat ggccttcgng aagaatcnag 540  
gctttcccaa ncttctttcc cccntttatc anggngctg gttttctnct ctcaagggtc 600  
ntttgaccgn accaccaaac ttctgaattn t 631

<210> 323  
<211> 647  
<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(647)

<223> n = A,T,C or G

<400> 323

actgtgggtc	gaagtaatgg	atacggacgt	aaccatcttc	gccgccgctg	ctgtagctct	60
tgccatcagg	atggaaggca	acactgttga	taggtccaaa	gtgacccttg	actcttccaa	120
actcttcttc	aaaggccaaa	tggaagaacc	tggcctcaaa	cttgccaatc	ctggtggagg	180
ttgtgggttac	atccatggct	tcctgaccac	cgcccaggac	cacatggtca	tagttggggg	240
agagggcagc	tgagttgaca	ggacgttctg	tccggaaaagt	cttctgatgt	tcaagagttg	300
tggagtcgaa	aagcttggct	gtgttgctct	tggacgcggt	cacaaacatg	ggcatgtccc	360
tggataactg	gatgtccgtg	atctgcccgg	agtgtctctt	aacattncca	acacctnttc	420
aaanttggca	ctatactggg	tgagctcttc	acttttatng	gcaacgnatg	atcacttccc	480
caaggggtccc	caaacagcac	tggggaattt	agagncattc	cagggaaactt	tatgtagggt	540
tcattggtgca	attggttnga	tcccagggtc	aaaaagttn	aaacactgga	nccctttctt	600
gtccnnggag	aacatgttat	ttgccccaa	g	nccgng		647

<210> 324

<211> 653

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(653)

<223> n = A,T,C or G

<400> 324

ggtacttttt	tttttttttt	tttttttttt	ttgagatgga	gtcttgctct	gttgccagac	60
cggagtgcag	tgggtgcgatc	tgggctcact	gcaatctcca	cctcccgggt	tcaagcgatt	120
ctcctgcttc	agcctcccga	gtaactggga	ctacaggtgt	gcgccaccaa	gcccagctca	180
tttttgtatt	tttagtanag	atggggtttc	acgatgttgg	ctaggatggt	ctcgatctct	240
ggtcagagtc	ttttctgtaa	aaatccttgg	taaagaagca	attttagact	gtancctgtt	300
gcaaatgcnt	taaggaagaa	gcaaaaacaac	tgntagtctt	tctgaaatga	aaaaactacn	360
ccagggctgg	tatatnnaga	gcaaccccaa	ccannactnc	catcntgatg	cccacagggg	420
cccactgana	naccengaaa	angtccnnaa	gcntaaannt	ngangcnttg	cttttgaaat	480
attgcgcng	taccnagntn	nagacaaaacn	ngnttaaggc	ccnnantntt	tggcengant	540
ttgcgataaa	aaaaacttgg	gggtcgctnc	nngatcccn	ttgtncceca	naantctggg	600
ggatgggttn	aagccentgn	cnaaagggtt	nngttctccc	aaggtaaaaan	nng	653

<210> 325

<211> 655

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(655)

<223> n = A,T,C or G

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<400> 325
ggtagcgggg gccttttggc tctctgacca gcaccatggc gggttgcaag aacaagcgcc      60
ttacgaaaagg cggcaaaaag ggagccaaga agaaagtggg tgatccattt tctaagaaag      120
attggtatga tgtgaaaagca cctgctatgt tcaatataag aaatattgga aagacgctcg      180
tcaccaggac ccaaggaacc aaaattgcat ctgatgggtct caaggggtcg tgtgtttgaa      240
agtgagtcct gctgatttgc agaattgatga agttgcattt agaaaattca agctgattac      300
tgaagatggt caagggtaaa aactgnctga ctaacttcca tggcatggat cttaccctgt      360
acaaaatgtg gtccatgggc aaaaaatggc agaccatgat tgaagcttac ggtgatgtca      420
agactaccga atgggtactt gcttcgtctg gtctgggggtg ggtttactaa aaaacgcaca      480
atnanatacc gaagaactct tatgcttang accacangtc cngccaatcc ggagaanata      540
tggaaatctg accccaaagn gccnaccaat gacttgaaaa annggccatt aaatggttcn      600
nacacnttgg aaaagcctta aaaggttgcc aantattaac ctntcatgaa gnttc      655

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<210> 326
<211> 657
<212> DNA
<213> Homo sapiens

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```

<220>
<221> misc_feature
<222> (1)...(657)
<223> n = A,T,C or G

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```

<400> 326
ggtagcgggg ggaaacggga gtgaacggag agcgtagtga ccatcatgag cctcctcaac      60
aagcccaaga gtgagatgac cccagaggag ctgcagaagc gagaggagga ggaatttaac      120
accggtccac tctctgtgct cacacagtca gtcaagaaca ataccaagt gctcatcaac      180
tgccgcaaca ataagaaact cctgggcccgc gtgaaggcct tcgataggca ctgcaacatg      240
gtgctggaga acgtgaagga gatgtggact gaggtacttt tttttttttt ttnttctttt      300
ttttgagata gggntcact gnatnaccca ntntggaatg caattggcat gaacncagct      360
tactgnagnc ttccaaacct gggtcaagc aattatnttg nattaacctn ttgagtacct      420
gggactntcn cangcaccan cctgcttttg ctactttaa tttttgtnaa nacnnggctt      480
gctttttttc ccaggntggn tcnactccn gaattaaggg atccttcccc ctcaattttt      540
aaannngctg ngattntnga atangccttt ttgttngccc ttttnacctt ttnnnnggtt      600
nnttcnnggc tttaancctn cggggggccn tttaaaggng aaatcnccncc ttggggg      657

```

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<210> 327
<211> 658
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(658)
<223> n = A,T,C or G

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```

<400> 327
ggtagctttt tttttttttt tttttttttt ttttttttgg tttgaaacag aaattttattc      60
tcanaataat gcacagaagc acaggttgag gctactcttg ggaagcttcc ctccccttcc      120
tcttcctcct ctccctcctc tctgaatgcc agggagaaca cagttgaagg aaggaaacat      180
gcaatcacia acaatgaaca actntaaaga caaaaagggtt tgggtccaaa gaactcaaca      240
taattaatcc aatgactgtg aanagcttca ctgagtagga ttaanatatt gcagatgtan      300
ngtttncaca ggggtggctnt tcagtgcacc ancggggcct ncttgangga natgaggact      360

```

```

gacncatncc ggaaanatct ttggcctgct tgctaaactt ggggntaaag gcacacnnc 420
cgggccaccc gttccactna nngcctgggg accanttgct aatgncnttt ccnaangntt 480
tttttgntgc cttgtggttg nttttggttt ctggaactgn tcgncctgnc ttgnaaacca 540
ttntntaac nccttaatgg cctttctttt cnnnctgggt ntgnttccaa aatnggatta 600
nggggttcang ngcccctact tnccgggggc ngttaaangg naattccncc nctggngg 658

```

```

<210> 328
<211> 644
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(644)
<223> n = A,T,C or G

```

```

<400> 328
acgcggacgg tggtttttgg gcccgtttct gagcagcgct tcctttttgt ccgacatctt 60
gacgaggctg cgggtgtctgc tgctattctc cgagcttcgc aatgccgcct aaggacgaca 120
agaagaagaa ggacgctgga aagtcggcca agaaagacaa agaccagtg aacaaatccg 180
ggggcaaggc caaaaagaag aagtgggtcca aaggcaaaagt tcgggacaag ctcaataact 240
tagtcttgnt tgacaaagct acctatgata aactctgtaa ggaagttccc aactataaac 300
ttataacccc agctgtggnc tcttgagaga ctgaagattc naggtcncct ggccagggca 360
gccctttagg agcttcttag taaaggactt atnaactggt tttnaancac agacctcaag 420
taattnacac cagaaatncc nnggtggaga atnctccnct gctggttnag angcatgaat 480
aggnncaacc agctntctct gncnnaccn cncctaggnc naattccgca cctcgcgccc 540
gttctnatgg atccnaactn ggtnccaant nggcnnacta tggcatancn tgccctgggg 600
aantggttcc nttccaatcc anaanttcta tcgnaactta acgg 644

```

```

<210> 329
<211> 651
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(651)
<223> n = A,T,C or G

```

```

<400> 329
actattagcc atggtcaacc ccaccgtggt cttcgacatt gccgtcgacg gcgagccctt 60
gggcgcgctc tccttttgagc tgtttgagca caaggtccca aagacagcag aaaattttcg 120
tgctctgagc actggagaga aaggatttgg ttataagggt tcctgctttc acagaattat 180
tccagggttt atgtgtcagg gtggtgactt cacacgccat aatggcactg gtggcaagtc 240
catctatggg gagaaatttg aagatgagaa cttcatccta aagcatacgg gtcctggcat 300
cttgtccatg gcaaagtctg gacccaacac aaatggttcc cagtttttca tctgcactgc 360
caagactgag tggttggatg gcaagcatgt ggtgtttggc aaagtgaata gaaagggcat 420
gaatattgtg gaggccatgg aaccgctttg ggtccaggaa tgncnagaac agcaagaaga 480
acaccattgc tgactgngga caactcgaat aagttggact tggggttant ttaaccacca 540
gaacaattcc tttgtncnta aggagancan ccctcaccca tttgntngca tatectanaa 600
actttgggct ttenttngtt cctttgggtc aggtttcctg gtcctccanc c 651

```

```

<210> 330

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<211> 643  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(643)  
 <223> n = A,T,C or G

<400> 330

actttntttt	ttttntnttt	tttttttttt	ctggaaggnt	ctcaggtctt	tatttgctnt	60
ctcaaattcc	aggaatngac	ttattttaatt	aatccatcaa	cctctcatag	caaatatttg	120
agaaaaacaa	tttatattca	gattcttatt	ttcagtaggg	aagtaagaag	ttgcagctca	180
ttgcacgtaa	agttgagaca	ganatggaga	catccagccc	cacctntctg	gaacaagaaa	240
gatgactggg	gaggaaacac	aggtcancat	gggaacaggg	gttacagtgg	acacaagggn	300
gggctgnctn	ttcacctnct	tacattatgc	taacagggac	ncaaaccat	tcaggggcct	360
ttgcnaaaag	aaatgccaaa	agctnttgaa	gtcncnaagg	ggangcgtga	aaaaaactgc	420
attnnagtc	ccgggtcctt	ngncgggaac	ccctnanggn	gaaatcncca	cactggcggg	480
ccgtactagn	ggatccagct	nggncccaat	tggnggaata	tggnaaanac	tggtcctgtg	540
ggaaaatggn	atccgtccaa	ttcnccactt	acanncgag	cctaaangna	aaacntgggg	600
ngcctatggg	gggctacnnn	aataatgggt	gcctacggcc	cnt		643

<210> 331  
 <211> 652  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(652)  
 <223> n = A,T,C or G

<400> 331

ggtacagatg	gcactgacaa	tcccctttct	ggtggggatc	agtatcagaa	catcacagtg	60
cacagacatc	tgatgctacc	agattttgat	ttgctggagg	acactgaaa	caaatccaa	120
ccaggttctc	aacaggctga	cttcctggat	gcactaatcg	tgagcatgga	tgtgattcaa	180
catgaaacaa	taggaaagaa	gtttgagaag	aggcatattg	aaatattcac	tgacctcagc	240
agcccgattc	agcaaaagtc	agctggatat	tataattcat	agcttgaaga	aatgtgacat	300
ctccctgcaa	ttcttcttgc	ctttctcact	tggcaaggaa	gaaggaagtg	gggacagang	360
agatggccct	ttcgtttang	tggccatggg	ccttnctttt	cactaaaagg	aattaccgaa	420
cagcnaaaag	aaagncttga	gatagtga	atggggatga	tatctttaga	agggngaaga	480
tgggggtggat	gaaattattc	attcctgnga	agnttgnaaa	ctgngcgnct	tcnnnaaant	540
nnnaggcatt	centnnctgg	centgccatt	gccattggnt	ccanttgcta	tagggatgcc	600
ccttaaanen	ntttccnnna	anagtnnaaa	acttgcnnntn	ggatccaacc	nn	652

<210> 332  
 <211> 648  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(648)

<223> n = A,T,C or G

<400> 332

cgagggtactt	tttttttttt	tttttttttt	tttttttgag	acagagtttc	actcttgctg	60
cccaggctgg	agtgcagtgg	cgcgatctcg	gtccactgca	acctcaccct	cccaggatca	120
agcgattctc	ctgcctcagc	cacctgagta	gctgggatta	caggcgccctg	ccactacacc	180
tagccaattt	ttgtattttt	agaagggaca	gcatttcacc	atgttggcca	ggctggtctc	240
gaactcctga	tctcaggnga	tccacccacc	tcagcctccc	aaagtggngg	gattacaggc	300
gtgagccact	gaaagtcttc	attagttttt	tggttaaatt	ttaaacataa	attatgttat	360
agcaaaaatt	cctaagaatt	gnaaaccact	ttatcagaaa	tatcnnaaat	tcacaaataa	420
tnccaaaatt	tataatagct	tttttccaga	ctaaaatttt	aaagctactg	anaagnggna	480
aacctnccta	nataggattt	acctaacatt	nnggantaaa	aggnanccan	ngcctgctaa	540
anatccagan	tatctaanaa	tccntnccctg	nntctcnntc	tatnttttca	natccgaatt	600
tttgaaccca	cnttangata	nctnntttcc	cccttaacnn	taattccc		648

<210> 333

<211> 656

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(656)

<223> n = A,T,C or G

<400> 333

cgagggtacaa	gatgtccaaa	tattgcgaag	atctatttgg	ggatctcctg	ttgaaacaag	60
cacttgaatc	acatccactt	gaaccaggca	gggctttgcc	atcccccaat	gacctcaaaa	120
gaaaaatact	cataaaaaaac	aagcggctga	aacctgaagt	tgaaaaaaac	agctggaagc	180
tttgagaagc	atgatggaag	ctggagaatc	tgctctccca	gcaaacatct	tagaggacga	240
taatgaagag	gagatcgaaa	gtgctgacca	agaggaggaa	gctcaccctg	aattcaaatt	300
tggaaatgaa	ctttctgctg	atgacttggg	tcacaaggaa	gctgttgcaa	atagcgtcaa	360
gaaggcttca	gatgaccttg	aacatgaaaa	caacaaaaag	ggcctgggtca	ctgtagaaga	420
tgagcangcg	tggatggcat	cttataaata	tgtaggtgct	ccactaatat	ccatncatat	480
ttgtcaccat	gatcaactac	cccagnctgt	naagggtcaa	ggtttcatgt	ggcanaagaa	540
ccccatattc	ttttacatgg	cttcctttaat	gaatcatcgg	cttggtactg	aaaccctgcc	600
attgaattgc	attntacaac	ggcaatgagc	natttcccca	gggaggccng	cnttct	656

<210> 334

<211> 647

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(647)

<223> n = A,T,C or G

<400> 334

acgcgggcgg	gaagtgcaga	ggcaaatgca	tttagtgttc	ttcagcatgt	cctcggtgct	60
gggccacatg	tcaagagggg	cagcaacacc	gccagccatc	tgcactaggc	tggttgccaag	120
gcaactcagc	agccatttga	tgtttctgca	tttaatgcca	gttactcaga	ttctggactc	180
tttgggattt	atactatctc	ccaggccaca	gctgctggag	atgttatcaa	ggctgcctat	240

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aatcaagtaa aaacaatagc tcaaggaaac ctttccaaca cagatgtcaa gctgccaaaga 300
acaagctgaa agctggatac ctaatgtcaa tggagtcttc tgagtgnntc ctggaagaaa 360
gtcgggtccc aagctcctaag tgctggntct tacatgccac cattcacaag tctttaacag 420
aatgattcan tggctaatagc tgatatcata aatgcnnaaa naaagtttgg ttctggcnag 480
aagtcaatgg cancaagtgg naaatttggg acatacnent ttgtgataag tgggaatactg 540
gngcncnctt acngganana cttaacgttn tttaanccaa acacaaccct tgaaagnnna 600
agctctaaan accattgggt tttttcnggg ngnaaaaaag gcttaag 647

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<210> 335
<211> 657
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(657)
<223> n = A,T,C or G

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```

<400> 335
acaggtcaga gtcttctttt cttttctttt tgagatggag tcttgctctg ttgccagact 60
ggagtgcagt ggtgcgatct gggtcactg caatctccac ctcccgggtt caagcgattc 120
tcctgcctca gcctcccgag taactgggac tacaggtgcg cgccaccaag cccagctcat 180
ttttgtattt ttagtagaga tgggggttca cgatgttggc taggatggtc tcgatctctg 240
gtcagagtct tttctgtaaa tatccttggg aaagaagcaa ttttagactg tagctgttgc 300
aaatgcttta aggaagaagc aaaacaactg tcaagtcttc ctgaaatgaa gaaactacac 360
cagggctgct atatcagagc aacccaacc agcacttcaa tcatgatgcc nacagtggcc 420
cagctgagag accnggagaa agttccagat gcanagactg ngatgctctt gactatggaa 480
atattgcggc cagtaccaag ttagagacca aacaggcata ngnncccgtt ttaattggcg 540
tgaattttgc gataaganaa cttggggggg tgctgcggat nccatgatcn ccagaaaact 600
tnngggatgg ggtanaggcc catggcagaa aggttanggt cttccaaag naaana 657

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<210> 336
<211> 649
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(649)
<223> n = A,T,C or G

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<400> 336
ggtacgcggg caactatgga attccacagc gtgctctgcg gggtcactcc cactttgtta 60
gtgatgtggt tatctcctca gatggccagt ttgccctctc aggtccttgg gatggaaccc 120
tgcgcctctg ggatctcaca acgggcacca ccacgaggcg atttgtgggc cataccaagg 180
atgtgctgag tgtggccttc tctctgaca accggcagat tgtctctgga tctcgagata 240
aaaccatcaa gctatggaat accctgggtg tgtgcaaata cactgtcagg atgaaaacca 300
cttaaaantgg gtgncttgng ncccttntng cccaacagca acaaccctat tatcgtcttc 360
tngggctggg acaaactggn taaaggatgg aacctggcta actgnaagct gaaaaacaac 420
cacattgggc acacangcta tntgaacacc gngactggct ttttcagang gatcctntgn 480
gcttntggag gcaaggatgg gcaagccatg ttatnggaac tcnaccaang caacaccttt 540
caccttaan ggggggacat tatnaacgcc ttgggttaac cttaacgttn ttggtttgng 600
ctgcncaggc ccacattaaa aatgggattt aanggaaana catttnann 649

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<210> 337  
 <211> 652  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(652)  
 <223> n = A,T,C or G

<400> 337  
 actcttgggtt tgtcaatggg actttccagc aatccaccca agagctcttt atccccaaca 60  
 tcaactgtgaa taatagtggg tectatacgt gccaaagccca taactcagac actggcctca 120  
 ataggaccac agtcacgacg atcacagtct atgcagagcc acccaaacc ttcataacca 180  
 gcaacaactc caaccccggtg gaggatgagg atgctgtagc cttaacctgt gaacctgaga 240  
 ttcagaacac aacctacctg tgggtgggtaa ataatacaaga gccttccggt cagtcccagg 300  
 ctgcagctgt caatgacaca ggacctnac tctactcagt gtcacaagga atgatgnaag 360  
 gaccttatga atgtggaatc cagaacgaat taaagcggtg accacagcga ccangcatcc 420  
 tgaatgcctt tttgggccan acgacccac cattttcccc tcataccact attaccgtcc 480  
 aggggtgnac cttagncttt tcttgccatg cagcctttac ccaccttgac agnatctctg 540  
 gctggatggt gggaacatna gnacncacnc aagagctntt tttccaaca tnatgggaaa 600  
 acanngnnct tatactgcag gccattactt ngcctnngcc cagnnggctn cg 652

<210> 338  
 <211> 651  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(651)  
 <223> n = A,T,C or G

<400> 338  
 ggtacatttg aacacacggc tgtgttaaag atgctgctaa tgtcagtcac tgggtgcact 60  
 aaaggatctc ttattttatg taaaacgttg ggattgacaa gatagatctg acactctgtt 120  
 aagttaccct ctgaagctac ttcttgtgaa atactaatga cagcatcatc ctgccaaagcg 180  
 aaagaggcag gcataagcaa ggacaaatta aaagggggta agagccttat catgatgagg 240  
 agtcttgntt tgacatcttg ggaaaagctg ccatagtgtg aaagtctgca atttctcacc 300  
 atggtttgca gtttgactgn ctctagttag ggtgaagtct ctgagtggca cacaccttaa 360  
 gcctgaaggn tttcccttta aattttcatt gagttggccc tcttcagcat atanggcttt 420  
 aagaacagaa canaccttg ttttaagtgg gtccatggga taaaatggga atggangact 480  
 ngaagaattc aagggtctgg ccactctngca gtattctgaa tatcgaaaat ncnccaaggc 540  
 tgctatataa anccccctgg gcaanacttc aatcggaanc ccacggnggc ccnactnana 600  
 gncaggaccn ttccaantgg aacatnggan tggggccttt gaggcnnngn n 651

<210> 339  
 <211> 634  
 <212> DNA  
 <213> Homo sapiens

<220>



<221> misc\_feature  
 <222> (1)...(634)  
 <223> n = A,T,C or G

<400> 339  
 acttttttttt tttttttttt ttttttctag tttcagttat ttattgattt aatcattgta 60  
 atctccaata gagattacaa tagagatctc caacatgatt tcatgcattt agaggagaaa 120  
 tatttcctgg ttaagtggaa aattgtgcgg atgtggcttc tggaanacct tcattctaaa 180  
 gcagcgttat agtgaaacat ttcatttana aatctggacg ttccttcttc agcttgctgt 240  
 aatccacatt cactgagtag aacttgtatt gatcattggg acccagtttg ttccagggct 300  
 ctgggttatt tctgccaac aaacatctgg attgaacaat gccagacgca agagatcagt 360  
 gttgctccag tagctccagt tccaataaat acnaagaggg ggatcaaagc tcggatgctt 420  
 cttggcctga ccgatgatct ggcgancat gtttgngca aagtctccga ctggaaagga 480  
 ganaaccgcc taccccaagc cctaagctaa aaattatntg ccccgcgacc ttgngcngga 540  
 cccnctaagg caattccacc actggcggcc gtctaangga tccacttggg ccaacttgng 600  
 naacatggca nactggtcct ggggaangta tccc 634

<210> 340  
 <211> 655  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(655)  
 <223> n = A,T,C or G

<400> 340  
 ggtactcttc cactcaggtt tccgtgcggc cactccagca cacgcagtat gagecgttca 60  
 tcccctcggc ctaccctac tacgccagcg cttctccat gatgctgggg ctcttcatct 120  
 tcagcatcgt cttcttgac atgaaggaga aggagaagtc cgactgaggg gctagagccc 180  
 tctccgcaca gcgtggagac ggggcaggga ggggggttat taggattggt ggttttgttt 240  
 tgctttgttt aaagccgtgg gaaaatggca caactttacc tctgtgggag atgcaacact 300  
 gagagccaag ggggtggagt tgagataatt tttatataaa agaagtttt ccactttgaa 360  
 ttgctaaaag tggnatTTTT cctatgtgca gtcactctc tcatttctaa aatagggacg 420  
 tggccaggca ccgtggctca tgccgtgtaat ccacactttt ggaggnnng caagcggtta 480  
 cgaagtcagg agatcgagac tattctgggt acacgnaaaa cctgncttac taaaagtacc 540  
 tgcccggccg gccgntcaaa ggogaatcca cacactggcg ggcgtactan tggatnccaa 600  
 cttggaccaaa cttgngnaa tatggcatac tgggtcctgg nggaaatggt accnn 655

<210> 341  
 <211> 648  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(648)  
 <223> n = A,T,C or G

<400> 341  
 acgaacctac agttttaact gtggatattg ttacgtagcc taaggctcct gttttgcaca 60  
 gccaaattta aaactgttgg aatggatttt tctttaactg ccgtaattta actttctggg 120

ttgcctttgt	ttttggcgtg	gctgacttac	atcatgtgtt	ggggaagggc	ctgcccagtt	180
gcactcaggt	gacatcctcc	agatagtgtg	gctgaggagg	cacctacact	cacctgcact	240
aacagagtgg	ccgtccctaac	ctcgggcctg	ctgcgcagac	gtccatcacg	ttagctgtcc	300
cacatcacaa	gactatgcca	ttggggtaag	ttgtgtttca	acggaaagtg	ctgtcttaaa	360
ctaaatgtgc	aatagaagg	gatggtgcca	tectaccgnc	ttttcctggg	tcctanctgn	420
gtgaatacct	gctacgtcaa	atgcntacca	ggttcattct	nccttttact	aaaacacaca	480
ggtgcaacag	acttgaatgc	taagtatacc	taattggata	tgggatttaa	ttttctttct	540
tacaancatt	tgtattgcta	acaggccaaa	atttcagtta	cccttagggg	ggttaacaat	600
cnaattaaac	ctgggaggca	tacnttgnc	aaatattact	gnaaaaaa		648

&lt;210&gt; 342

&lt;211&gt; 342

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(342)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 342

ggtacttttt	tttttttttt	tttttttttt	gttttttttt	tttttttttt	tttttttttt	60
tggctntana	gggggtanag	gggggtgctat	agggtaaata	cgggccctat	ttcaaanatt	120
tttaggggaa	ttaattctag	gacnatgggc	atgaaactgn	ggtttgctcc	acanatttca	180
nagcattgac	cgtagtatac	ccccggtcgt	gtancgggtga	aagtggtttg	gtttaaacgt	240
ccgggaattg	catctgtttt	taagcctaata	gtggggacag	ctnatgagtg	caaacgctct	300
tgngatgtaa	ttattatacc	aatgggggct	ttaatcggga	at		342

&lt;210&gt; 343

&lt;211&gt; 484

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(484)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 343

ggtacgatgc	ctagtgtatga	gtttgctaata	acaatgccag	tcaggccacc	tacgggtgaaa	60
agaaagatga	atcctagggc	tcagagcact	gcagcagatc	atttcataat	gcttccgtgg	120
agtgtggcga	gtcagctaaa	tactttgacg	ccgggtggga	tagcgatgat	tatggtagcg	180
gagggtgaaat	atgctcgtgt	gtctacgtct	attcctactg	taaatatatg	gtgtgctcac	240
acgataaacc	ctaggaagcc	aattgatata	atagctcaga	ccataacctat	gtatccaaat	300
ggttcttttt	ttccggagta	gtaagttaca	atatgggaga	ttattccgaa	cctggtagga	360
taagaatata	aacttcaggg	tgaccgaaaa	atcagaatan	gtgttggtat	agaatggggg	420
cttcttcttc	ngcggggtcn	aanaaggtgg	tggtncgcg	tcctggccng	gcnggcgctc	480
gaan						484

&lt;210&gt; 344

&lt;211&gt; 657

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(657)  
 <223> n = A,T,C or G

<400> 344  
 cgaggtacgc gggattgttc tggggcttgt cctcctttct gttacgggtcc agggcaagggt 60  
 ctttgaaagg tgtgagttgg ccagaactct gaaaagattg ggaatggatg gctacagggg 120  
 aatcagccta gcaaactgga tgtgtttggc caaatgggag agtgggtaca acacacgagc 180  
 tacaaactac aatgctggag acagaagcac tgattatggg atatttcaga tcaatagccg 240  
 ctactgggtgt aatgatggca aaaccccagg agcagttaat gcctgtcatt tatcctgcag 300  
 tgctttgctg caagataaca tcgctgatgc tgtagcttgt gcaaaaangg ttgtcccgtg 360  
 atccacaagg cattaagagc atgggtggca tggagaaatc gttgtcaaaa cagagatgtc 420  
 cgcagtatgt tcaanggtgt ggagtgtaac tncagaattt tccntcttca ctcatttggc 480  
 tctctacatt aaggagtagg aaataantga aagggtccct ccattaattt cccttcaaca 540  
 aataattttt tccgaaacng gaccaaatat ggcttcttn tagannataa tgtcntaagg 600  
 ggnattttatt ttaagcnnc cantttttaat ttgcaaatna ctatctgggg aaaatac 657

<210> 345  
 <211> 662  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(662)  
 <223> n = A,T,C or G

<400> 345  
 ggtacgcggg cgactcttag cgggtggatca ctcggctcgt gcgtcgatga agaacgcagc 60  
 tagctgcgag aattaatgtg aattgcagga cacattgatc atcgacactt cgaacgcact 120  
 tgcngccccg gggtccctcc ggggctacgc ctgtctgagc gtctcttgca aaaaaaaaaat 180  
 aaannanaan acancaagta caatttaatg cntanaaagg cctctctcca taaaactcan 240  
 cnctttacag atgtangaat atataagcnn tgccaaaatt actaatntgc cacatacnna 300  
 gcatcaattc caggtgctag tnagnnggaa aaaaanttgg agaattcggc cctcgangag 360  
 ctccanannt taanctnct tactaantnc canggttctt tcaagcatgg aaaaattaat 420  
 ngtgctncat ngatnaangn cttgtcattg ggcttnttt cctngacctg gcccggccgn 480  
 ccgttcnaaa ggctaaatcc agacactgcg gccgttntaa tgggttcnnac ttgggccaag 540  
 cttgggnaat catgggcaaa gctgttctcg ggnnaaatnt tatccnctcc aattcncaca 600  
 natacgaanc tgaancttaa gtgtnanntn gggngctaaa agtggcnaaa ctcccttnat 660  
 gg 662

<210> 346  
 <211> 654  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(654)  
 <223> n = A,T,C or G

```

<400> 346
acttcttggc cgcctcacta gcactctccg cctgcttttt aaaggcttca ttggaggcca      60
gcagcgtggc ctgctgcgaa atgagagtca ccaggcgtct aagcaggaag gacagcagcg      120
aggaaaagcc agcaatgtag agattcctct gggcacggaa aagcttcatg tggagtgct      180
ccatggcccc gggattgttc tggaggttca ccttttccgt cacatcatca tacttccgaa      240
tttcgcgcac ggcacgagtg accaacagca caaggatgac aatgagaacc acaaagaagg      300
tgttgccata ggacactaac aactccacca gccgggactt gaaaatcttc tgccatcttt      360
taggagaaat gaagggaatg cagagaagca acacaacaaa gaccttcgca tagaggaagg      420
tggcaactgc agtccactgc agactcatcc tgggtctana agggttccac aggaagatgt      480
gaacttgtnn cgagtttcca cagtcaacgt gtcccccgta ccttnggccg ngaacacnct      540
taaggcgaat tccaccactg cnggccgtct antggatcca actnggncca acttggcgaa      600
tatggcaaat tgttctnngg naaatggttc ngtcatttcc ccantacnac cgga      654

```

```

<210> 347
<211> 536
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(536)
<223> n = A,T,C or G

```

```

<400> 347
ggtactaatt taaggtaaca attctcgagg taaaataagg cattatagta acacaatttt      60
catgcctcag caattaacaa tgattttcgt ttaattctct tccaactcta cagacataat      120
tctgctttca ccttcatcac gctttcatat ggttttaaca ggggatacac ctctcttct      180
aagaatctct gcacctgctg ggaggcacga ccagtgaag aagaaggatc cagtaaataga      240
tccaactggg agtgaatggg actgaagtag gcatcaacct ggatacgctc tatgaggna      300
ttgcaccccc ttcttgctta accacagaag ctgcctgctg agaaagcact ctgattttct      360
catggcaatc ctggcggcta ccttcaacttt gaccatggcg atgatgatgg tctctgtggc      420
catgaaangc agctcttgcc gaatgcgcgg tcaattactt tggggtacct gccnnggccg      480
gccgntcnaa nggcgaattt cagccactgg cngnctgact agnggatcca actcgg      536

```

```

<210> 348
<211> 665
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(665)
<223> n = A,T,C or G

```

```

<400> 348
ggtacgcggg gagtccggcgt aggccttagg tgggttcgtg cgccttctac ctgcgtgttt      60
cggttttctt ggctcctcgg cccttttctc ccctgttgca gctgggagcg gacgaagcgc      120
gaagctggga ttttttactg tctcctgaag aattttaacac aaacatggat atcagaccaa      180
atcatacaat ttatatcaac aatatgaatg acaaaattaa aaaggaagaa ttgaagagat      240
ccctatatgc cctgttttct cagtttggtc atgtgtggga cattgtggct ttaaagacca      300
tgaagatgag ggggcaggcc tttgtcatat ttaaggaact gggctcatcc acaaatgcct      360
tgagacagct accaggattt ccattttatg gtaaaccaat gccaatagag tatgcaaaaa      420
cagattcgga tataatatca aaaatgcgtg gaacttttgc ttaaaaaaaa aaannnnnna      480

```

```

naaaaaagtc ctgccnggcc gcccggttcaa anggcgaatt naccactggc ggccggtteta 540
gnggatccaa ctnggnacca acttggcgta atatggcaaa actggtnccg ngngaaatgg 600
tatccggtan aattcccaca cttcaaccgg aacctnaang taaacctggg gcctaagagn 660
gacnn 665

```

```

<210> 349
<211> 474
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(474)
<223> n = A,T,C or G

```

```

<400> 349
acttcgtcag tttgtaagac atgagtcgga aacaactacc agtttggttc ttgaaagatc 60
cctgaatcgt gtgcacttac ttgggcgagt gggtcaggac cctgtcttga gacaggtgga 120
aggaaaaaat ccagtcacaa tatcttctct agcaactaat gagatgtggc gatcagggga 180
tagtgaagtt taccaactgg gtgatgtcag tcaaaagaca acatggcaca gaatatcagt 240
attccggcca ggccctnagag acgtggcata tcaatatgtg aaaaaggggt ctcgaattta 300
tttgggaagg aaaatagact atggtgaata catggataaa aataatgtga ggcgacaagc 360
ncaaccatca tagcttgatn atattatatt tctgagtgcc agaccaaaga gaaggagtnt 420
aaanggatga tcntcttttg ggcattcatt tgggaccttn ggccgggaac accc 474

```

```

<210> 350
<211> 452
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(452)
<223> n = A,T,C or G

```

```

<400> 350
acgcgggggac cgtggagagc agagcgcggc ggctggaagc tgctaagtca gagccgcgat 60
gttccgggatt gagggcctcg cgccgaagct ggaccgagag gagatgaaac ggaagatgag 120
cgaggatgtg atctcctcca tacggaactt tctcatctac gtggccctcc tgcgagtcac 180
tccatttatc ttaaagaaat tggacagcat atgaagacag gacatcacat atgaatgcac 240
gatatgaaga gcctgggttac agtttcgact cctctctgca agtgaatagg cccagaaagg 300
tgtaagagac tctttgaatg gacataaaat tctgcttggt aagaacaagt ttgggtctgg 360
taactgacct tcaaagctaa aatataaaac tatttgggaa agtatgaaac gatgtcttcg 420
tgatctgggtg taccttggn c gngaccacgc tt 452

```

```

<210> 351
<211> 616
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(616)

```

<223> n = A,T,C or G

<400> 351

ggtacgcggg	aataattcca	tagtcaagag	catcacagtc	tctgcatctg	gaacttctcc	60
tggctctca	gctggggcca	ctgtcggcat	catgattgga	gtgctgggtg	gggttgcctc	120
gatatagcag	ccctgggtga	gtttcttcat	ttcaggaaga	ctgacagttg	ttttgcttct	180
tccttaaagc	atattgcaaca	gctacagtct	aaaattgctt	ctttaccaag	gatatttaca	240
gaaaagactc	tgaccagaga	tcgagaccat	cctagccaac	atcgtgaaac	cccatctcta	300
ctaaaaatac	aaaaatgagc	tgggcttggt	ggcgcgcacc	tgtagtccca	gttactnggg	360
aggctgaggc	aggagaatng	cttgaacccg	gnaggtggag	attgcagtga	gccagatcgn	420
acnactgnac	tcagtctggc	aantgagnag	gcttccatct	nanaangaan	aganangang	480
actntnacct	ggacctgccn	ggccggtcgt	ttgngcaggt	cnggagattt	attcccttng	540
ggtggggngc	nntaattggg	tgntggggcn	attcangttt	tgggaatttc	nncttggnnn	600
naaaanggga	aatttt					616

<210> 352

<211> 603

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(603)

<223> n = A,T,C or G

<400> 352

ggtacggcac	ttggcgtaaa	gccgcttccc	tcaagagtaa	ctacaatctt	cccatgcaca	60
agatgattaa	tacagatctt	agcagaatct	tgaaaagccc	agagatccaa	agagcccttc	120
gagcaccacg	caagaagatc	catcgcagag	tcctaaagaa	gaacccactg	aaaaacttga	180
gaatcatggt	gaagctaaac	ccatatgcaa	agaccatgcg	ccggaacacc	attcttcgcc	240
aggccaggaa	tcacaagctc	cgggtggata	aggcagctgc	tgacgcagcg	gcactacaag	300
ccaaatcaga	tgagaaggcg	gcggttgcat	gcaagaagcc	tgtggtaggt	aagaaaggaa	360
agaaggctgc	tggtgggtgt	aagaagcaga	agaagcctct	gggtgggaaaa	aaggcagcag	420
ctaccaagaa	aaccagcccc	tgaaaagaac	ctgcagagaa	gaaacctact	acngaggaga	480
agaagcctgc	tgcataactc	ttaaatttga	atatttcntt	aagggcnaat	nttttggcag	540
gttctttgga	taagacntnt	tttcngngtg	ggaaaataan	tnnnntattn	nnggctntcc	600
tgg						603

<210> 353

<211> 604

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(604)

<223> n = A,T,C or G

<400> 353

ggtaccgact	gtttttgaca	actatgcagt	cacagttatg	attgggtggag	aaccatatac	60
tcttggactt	tttgatactg	cagggaaga	ggattatgac	agattacgac	cgctgagtta	120
tccacaaaca	gatgtatttc	tagtctgttt	ttcagtggtc	tctccatctt	catttgaaaa	180
cgtgaaagaa	aagtgggtgc	ctgagataac	tcaccactgt	ccaagactc	ctttcttgct	240

tggtgggact	caaattgatc	tcagagatga	cccctctact	attgagaaac	ttgccaaagaa	300
caaacagaag	cctatcactc	cagagactgc	tgaaaagctg	gcccgtgacc	tgaaggctgt	360
caagtatgtg	gagtgttctg	cacttacaca	gaaaggccta	aagaatgtat	ttgacgaagc	420
aatattggct	gccctggacc	tncagaccga	agaagacccc	aagtgtgtgc	tgctatgaac	480
atcttttcaga	gcctttcttg	nacagctgga	ttggcatctt	cttaaagcca	tgnttaaatt	540
caacttanga	ttaaaattaa	aattcgtttt	gcannatggc	caatgcctgg	actaaccan	600
ggcn						604

&lt;210&gt; 354

&lt;211&gt; 631

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(631)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 354

ggtacttttt	tttttttttt	tttttttttt	tttgggaagg	agtcattgctc	tgctgcccag	60
gctggagtg	agtggcatga	tctcggtcca	ctgcaagctc	cgcctcccgg	gctcatgcca	120
ttctcctgcc	tcagcctccc	gagtagctga	gattataggg	acctaccacc	acgcccggct	180
aatttttgta	tttttagtag	agacgggggt	tcaccatggt	gaccaggctg	gtctcgaact	240
cctgacctta	ggtgatccac	tcgccttcac	ctcccaaagt	gctgggatta	caggcgtgag	300
ccaccgtgcc	tggccacgcc	caactaattt	ttgnattttt	agtaagagac	aggggtttcac	360
catgttgccc	aaggctgctc	tttgaactcc	tgacctcatg	taatcgacct	gcctttggcc	420
ttccaaaagt	gctgggatta	ccaggtgtga	gcccacaagc	cccggnacct	ggccnngcng	480
gccgtttaaa	agggcgaaat	cagcacaatg	gnngggcgta	ctaaggggat	ncnanccttg	540
nanccaactt	tgggggaaat	atgggggcana	actggttctt	ngngnaaatg	gtaaccgtta	600
caaattcccn	caaanttttg	nnccgggagg	n			631

&lt;210&gt; 355

&lt;211&gt; 626

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(626)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 355

ggtacgatgc	ctagtgatga	gtttgcta	acaatgccag	tcaggccacc	tacggtgaaa	60
agaaagatga	atcctagggc	tcagagcact	gcagcagatc	atttcattat	gcttcctgtg	120
agtgtggcga	gtcagctaaa	tactttgacg	ccggtgggga	tagcgatgat	tatggtagcg	180
gaggtgaaat	atgctcgtgt	gtctacgtct	attcctactg	taaatatatg	gtgtgctcac	240
acgataaacc	ctaggaagcc	aattgatata	atagctcaga	ccatacctat	gtatccaaat	300
ggttcttttt	ttccggagta	gtaagttaca	atatgggaga	ttattccgaa	gcctggtagg	360
ataagaatat	aaacttcagg	gtgaccngaa	aaatcagaat	aggtgttttg	tttagaatgg	420
ngtcttctnc	ttcngetggg	gttnnaagaan	gtnggggttc	nngcgtncn	gntcgggcgg	480
ntggttttta	nggccnaaat	tcnngnataa	ttggcggcng	ttactaagng	gnatctanct	540
tggtncctaaa	nttggngnta	atcatggtnc	tagctngtnc	tcngtgntaa	attggntncc	600
tgtaaattnt	tntnnaatnt	tntggc				626

<210> 356  
 <211> 617  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(617)  
 <223> n = A,T,C or G

<400> 356  
 actttttttt tttttttttt ttttttttcta gtttcagtta tttattgatt taatcattgt 60  
 aatctccaat agagattaca atagagatct ccaacatgat ttcattgcatt tagaggagaa 120  
 atatttcctg gttaagtggg aaattgtgcg gatgtggcct ctggaanacc ttcattctaa 180  
 agcagcgtta tagtgaaaca tttcatttan aaatctggac gttccttctt cagcttgctg 240  
 taatccacat tcaactgagta naacttgat tgatcattgg gaccagttt gttccagggc 300  
 tctgggttat ttctgtccca acaaaccatct ggattgaaca atgccagacg caagagatac 360  
 agtggtgctc cagtagctcc agttccaata aatacnaaga gggggatcaa gctcggatgc 420  
 ttcttggcct gaccgatgat ctggccggaa ncatgtttgc cggcaaaaagg ctccnacttg 480  
 ggaaagggga naaccgcct aaccnccagg gcctaagctt aaaatttttg gccccgggta 540  
 ccttggccgg gacccctaa gggngnaatt ccnncccctt ggggggcccgt ttaangggan 600  
 ccaacttggg ccaaatt 617

<210> 357  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 357  
 ggtaactttt tttttttttt tttttttttt ttttaggcaa agaactttat taatctttgt 60  
 ttcaaacttg attcccaggc ttcttcggct taattagctg caaagaatga attgngtata 120  
 agcaaaaact gaaaagagct gcagtgtcca aggggcttgg gcttaaaaaat attagagatc 180  
 tagattttat cagatccata aacaaaaatt tcttaaaaag cagtcataat ataaaatagc 240  
 agctcccagt aacttcttca ggnnttatct tcagaagttg actcaattca gtttgctca 300  
 ttcttggaag cctcatcaaa attctccaca agatctggaa ctctcatcatc atcatcctct 360  
 ccagtaacaa gtggngcttt tccatcccca gantggttgg gcanaacttt ngncagctc 420  
 cttaacttag cagactattc ggacccaagc tnggttnaaa aanctgggaa cnatttntgn 480  
 naactgggtt ggttnaacan ggcntgnaag ggggaaagg gnccctgcc caaaaaaccn 540  
 ggaccttag ggtgnnaaag gggacctggc cctgggttgg aaccaantcn ccttttnana 600  
 ccnnanaatn g 611

<210> 358  
 <211> 619  
 <212> DNA  
 <213> Homo sapiens

<220>



<221> misc\_feature  
 <222> (1)...(619)  
 <223> n = A,T,C or G

<400> 358  
 ggtacttttt tttttttttt tttttttttt ttgagatgga gtctcgctct gtcgcccagg 60  
 ctggagtgca gtggcgcaat ctctgtcac tgcaacctcc gcctcctggg ttcaagcaat 120  
 tctcctgtct cagcctccca aatagctggg attacgggca tgtgtcacga cgctcggcta 180  
 atttttgtat ttttagtcga gacgaggttc caccatgttg gctaggctgg tctcaaactc 240  
 ctgacctcag gtgatccgcc tgctcgggcc tcccaaagtg ttaggattac ggggtgtgagc 300  
 cactgcgccc agcaagcaac ctgattttta aaacaacatg agataaataa gcctaattgg 360  
 atttaactac atctaacatt tttactaata gttgnaatac tggtagaatt tggaaactat 420  
 tatatatatt atgcngaaaa gtaaataatt ctggtaaaat canttanggn cntgaattt 480  
 nagcataggg gaaaaaaaaga tgccntttta aatccaataa gtaaaaaccn ttttaacctn 540  
 tntttaaatt ggaanttccc cccaatttnt tattaatttc aacttntttt gaaaactcat 600  
 ntttccnaaa antnggggg 619

<210> 359  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(624)  
 <223> n = A,T,C or G

<400> 359  
 ggactttttt tttttttttt tttttttttt ttttttggag gaaaaccggg taatgatgtc 60  
 ggggttgagg gataggaggga gaatggggga taggtgtatg aacatgaggg tgctttctcg 120  
 tgtgaatgag ggttttatgt tgtaaatgtg gtgggtgagt gagccccatt gtgttggtg 180  
 aaatatgtag agggagtata gggctgtgac tagtatgttg agtcctgtaa gtagganagt 240  
 gatatttgat caggagaacg tggttactag cacagagagt tctcccagta ggттаатagt 300  
 ggggggtaag gcgagggttag cgaggcttgt tanaagtcac caaaaagcta ttagtggggag 360  
 tagagtttga agtccttgag agaggattat gatgccactg ngaatgcntt cctaatttga 420  
 gtttgctagg cagaatagtn atgaggatgt aaacccctng gccaattatt aaaaatgact 480  
 gcncctgtga aacttnaggg ggtttggatt aaaaangcct gtacttccaa nggctntntg 540  
 gcctnattta aaaaatttcc ctnnncnaat ttaggggctn ttnnncnaag ccanagggg 600  
 cccnancct ttcccggggg ggcn 624

<210> 360  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 360  
 acgcgggggag gcggaggctt ggggtgcgttc aagattcaac ttcacccgta acccaccgcc 60  
 atggccgagg aaggcattgc tgctggagggt gtaatggacg ttaatactgc tttacaagag 120

```

gttctgaaga ctgtcctcat ccacgatggc ctagcacgtg gaattcgga agctgccaaa 180
gccttagaca agcgccaagc ccattcttgt gtgcttgcac ccaactgtga tgagcctatg 240
tatgtcaagt tgggtggaggc cctttgtgct gaacacccaaa tcaacctaat taagggtgat 300
gacaacaaga aactaggaga atgggtaggc ctttgtaaaa ttgacagaga ggggaaaccc 360
cgtaaagtgg ttgggtgcag ttgtgtagta attaanact atggcaagga gtctcagcca 420
aggatgtcat tgaagagtat ttcaaatgcc agaaatgaag aaattaaatc nttggcttac 480
ttaaaaaaaaa annnnnnnnn aaaaaaaagg tccttgggcg gnacaccctt aaggggnaat 540
tcnnnnccct gggggccntt ataangggnn ccnacttggg ccaaattggg naaananggg 600
naaanttttt n 611

```

<210> 361  
 <211> 404  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(404)  
 <223> n = A,T,C or G

```

<400> 361
acatatTTTta atagaaagat acaacctttt tatttttcaact cctttttatTTt ctgctgcttG 60
gcacattTTTt gagttttccc acattatttG tctccatgat accactcaag cagtgtgctG 120
gacctaaaaat actgactTTta gttagtatcc ttggattTTt agattcccag tgtctaattc 180
cctgttataa tttgcgcaaa caaaacaaaa tgttatgata atcttttctcc actgttctaa 240
tatatatTTgt atTTTttatTTt gatagcttgg gattttaaAAC atctctgttG aaggcttttG 300
atcctTTTtga gaaataaaga tctgaaagaa atggcataat cttaaaactt gataaaaaaa 360
aaanannnnn nnnaaaaaaa aaagtacctn ggccgngacc acgc 404

```

<210> 362  
 <211> 322  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(322)  
 <223> n = A,T,C or G

```

<400> 362
ggTactTTTt tTTTtTTTt tTTTtTTTt tTTTtTggag ttgtaggcaa atgtTTtaatt 60
aattctgctc atatgcacat ctgaaagcat gagacacact ccacagacag cacgcactgg 120
ggctggTggg gcanatgggc actcgccgat taggtattaa tgtcaataat acgtgcataa 180
agtgtgata aaataactta agtgttacia aaagagacag tccacggTgg ctgcaggcac 240
atgcaggcgG gactgggtca gacactccag ggctgcacat gttccagctg gcctgagtcc 300
gacacgtcat agctggcctt gt 322

```

<210> 363  
 <211> 616  
 <212> DNA  
 <213> Homo sapiens

<220>

<221> misc\_feature  
 <222> (1)...(616)  
 <223> n = A,T,C or G

<400> 363  
 cgaggtacgc gggctaagca agggaaaaat aacagtttct ctgagccaga gaagacttga 60  
 tcacagttct ccaagcatcg tgatagcaat gcttaacccc aggaagattt caaggcaggg 120  
 agaagaacat ttcaaataag attcttggtta acccatttat gcctagtgtt ccattattgg 180  
 aatgctaagc ttgtgggagt catttacatc ctactgctca aagtcattgc caaggctctga 240  
 tttttcacac aaaaaattgc aacccccagc ataaatgttt agctactgtc atcagttagc 300  
 aaattcatcc acacaaacac aattagagtt tgggtttttt ttaagctttt caaaacttac 360  
 taaactggca caattttata tgtatgctat ttgggtgnatt tatgcttaag agcnaaaaaag 420  
 tttgatggga ttttaaattc angccaagcc tacacgctga gacaatccct acaaccatgg 480  
 nagtaactaa ngaaccttta tctaagnttt taagttttaa anggagngct taatggttca 540  
 ngtctangtt ggaatttcct tcanaaattt cntcttttaa aaaattttcc caaaatnggt 600  
 ccttaaaaaa ctcann 616

<210> 364  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(618)  
 <223> n = A,T,C or G

<400> 364  
 cgaggtacgc ggggctttct gcctaacgcc gccaacatgg tgttcaggcg cttcgtggag 60  
 gttggccggg tggcctatgt ctcttttgga cctcatgccg gaaaattggt cgcgattgta 120  
 gatgttattg atcagaacag ggctttgggtc gatggacctt acactcaagt gaggagacag 180  
 gccatgcctt tcaaatgcat gcagctcact gatttcaccc tcaagtttcc gcacagtgc 240  
 caccagaagt atgtccgaca agcctggcag aaggcagaca tcaatacaaa atgggcagcc 300  
 acacgatggg ccaagaagat tgaagccaga gaaaggaaag ccaagatgac agattttgat 360  
 cgttttaaag ttatgaaggc aaagaaaatg aggaacagaa taatcaagaa tgaaagttaa 420  
 agaaacttca aaaggcagct nttctgaaag ctntttccca aaaaagcacc tgggtacctg 480  
 gccgggcccgg ccgttttaaaa gggcnaattc caccactggc ggccgtctan ngggatccaa 540  
 cttnggacca acttggngga atatggcnaa attgttcctg gggnaaatgt ttncgttcaa 600  
 attncncaaa ttacggcc 618

<210> 365  
 <211> 601  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(601)  
 <223> n = A,T,C or G

<400> 365  
 acgtcctgga ggactctatt gtggacccac agaatcagac catgactacc ttcacctgga 60  
 acatcaacca cgcccggctg atgggtggtg aggaacgatg tgtttactgt gtgaactctg 120

acaacagtgg	ctggactgaa	atccgccggg	aagcctgggt	ctcctctagc	ttattttggtg	180
tctccagagc	tgtccaggaa	tttgggtctt	cccggttcaa	aagcaacgtg	accaagacta	240
tgaagggttt	tgaatatatc	ttggctaagc	tgcaaggcga	ggcccccttc	aaaacacttg	300
ttgagacagc	caagggaagc	aaggagaagg	caaaggagac	ggcactggca	gctacagaga	360
agccaaggac	ctcgccagca	aggcgccac	caagaacagc	agcagcagca	acagtgtgtg	420
taaccagnct	accaacaaca	nagnacccca	nacaggtagg	cttaccctt	tggcctcctt	480
taatggacct	tggccgggaa	cacccttang	gcgaattcag	ncactggggg	ccgtactang	540
ggatccnctt	ggaccaactt	ggggaaacag	ggcaaaattg	ttcttgggga	aattntatcc	600
n						601

&lt;210&gt; 366

&lt;211&gt; 321

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 366

actttttttt	ttttttttt	tttttttgag	atggagtctc	actctgtcgc	ccaggctgga	60
atgcagtgg	gcaatctcag	ctcactgcaa	cttcacctc	ccagggtcaa	gtgattctcc	120
tgcctcagcc	tcccacatat	ctgggactac	aggtgcacac	caccatgccc	agctaatttc	180
tttgtatttt	ttagtagaga	cggggtttca	tcttattggg	caggctgggc	tcgaactcct	240
aaccttgtga	tctgcccacc	tcggccttcc	aaagtgctgg	gattacaggc	gtgagccacc	300
gtgctcggcc	accgcgtac	c				321

&lt;210&gt; 367

&lt;211&gt; 264

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 367

actgatcatg	gagttaatca	acaatgtcgc	caaagcccat	ggtgggttact	ctgtgtttgc	60
tggtgttgg	gagaggaccc	gtgaaggcaa	tgatttatac	catgaaatga	ttgaatctgg	120
tgttatcaac	ttaaagatg	ccacctctaa	ggtagcgtg	gtatatgggc	aatgaatga	180
accacctgg	gctcgtgcc	gggtagctct	gactgggctg	actgtggctg	aatacttcag	240
agaccaagaa	ggtcaagatg	tacc				264

&lt;210&gt; 368

&lt;211&gt; 488

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(488)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 368

ggtacagatg	cacaggaggc	catagggttt	aggcanaggg	gagcaciaan	gttgaagatg	60
aggcgctgcc	atcaatgctg	ggacttcagg	cnaagggcag	gaactgagga	agccacaagg	120
gaggacattt	tctgcagttg	ctgaancagt	ancaactagg	tcctgagaaa	gccctntctc	180
gtggaagaat	aacagccagg	cnggaaagct	tttcactctg	caaagctggg	gaagaagatt	240
cttccttaaa	ttgtcatctg	cacttcagct	cangaatcct	gttggtgaa	gtccagagtg	300
tcnntttctg	attcctgaag	tanatnaaca	gccngnccc	aangaagagn	aggnttagta	360
caaagccnnc	tncgcgtacc	tgtncgggcg	gnngttcgna	aggntcaaat	tccagcacia	420

ttgncctgccg ttantagttg gattctnact ttngtactta ncttggcgta ntttatggtn 480  
ataanttg 488

<210> 369  
<211> 602  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(602)  
<223> n = A,T,C or G

<400> 369  
acggggggttt cactacttct cccccggact ccttggtagt ctgttagtgg gagatccttg 60  
ttgccgtccc ttgcctcct tcaccgccgc agacccttc aagttctagt catgcgtgag 120  
tgcatctcca tccacgttgg ccaggctggg gtccagattg gcaatgcctg ctgggagctc 180  
tactgcctgg aacacggcat ccagcccgat ggccagatgc caagtgacaa gaccattggg 240  
ggaggagatg attccttcaa cacttcttc agtgaaacgg gtgctggcaa gcatgtgcc 300  
cgggcagtgt ttgtagactt ggaacccaca gtcattgatg aagttcgac tggcacttac 360  
cggcagctct tcaccctgag caactcatca caggcnagga aaaatgctgc aataactatc 420  
ccgaaggcac tacaccattg gcaaggagaa taattgacct gtgttgacc gaattcgcaa 480  
gctggctgac catgcaccgg cttaagggtt nttggtttcc ccaacttttg gggggggaac 540  
tgggtttngg gtaaccctnn tggtnatngg aacgntttta antggatttt gggaanaaan 600  
cc 602

<210> 370  
<211> 257  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(257)  
<223> n = A,T,C or G

<400> 370  
actttttttt tttttttttt ttttagttttt ttttattttt tacaaatata ctggagaatc 60  
atgcaatgct gccagcattg gatgcaatcc ggggccacaa gtctgcacac tcctttgcta 120  
ctggtcctgt aatggcagaa cctttcatct cgcctttatt gntcactatg actcctgcat 180  
tatcttcaaa ataaagaaac acgccatctt ttctacggta tgactttcgt tgtcgaatga 240  
ccactgctgg atgtacc 257

<210> 371  
<211> 607  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)...(607)  
<223> n = A,T,C or G

```

<400> 371
actttttttt tttttttttt ttttttttgc atttagtttt tatttcataa tcataaaactt      60
aactctgcaa tccagctagg catgggaggg aacaaggaaa acatggaacc caaaggggaa      120
tgcagcgaga gcacaaagat tctaggatac tgcgagcaaa tggggtggag ggggtgctctc      180
ctgagctaca gaaggaatga tctgggtggt aagataaaac acaagtcaaa cttattcgag      240
ttgtccacag tcagcaatgg tgatctttct gctgggtctg ccattcctgg acccaaagcg      300
ctccatggcc tccacaatat tcatgccttc tttcactttg ccaaacacca catgcttgcc      360
atccaaccac tcagtcttgg caagtgcaga tgaaaaactg ggaaccantt ggggttgggt      420
ccacatttgc catggacaag aatgccagga acccgatgc ttaaggatg aagtctcatc      480
ttcaaaattc ttccccataa atggacttgc caccagngcc attatggcgt gtgaagtccc      540
cancctggcc cataaacctt ggaaaaatnt tggnaaacgg gaaccctttt aaccaatcct      600
tttttttc
607

```

<210> 372

<211> 607

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(607)

<223> n = A,T,C or G

```

<400> 372
acgaatgtgg gaattactca ggagcagcag aatatcttta tttttttaga gtgctgggttc      60
cagcaacaga tagaaatgct ttaagttcac tctggggaaa gctggcctct gaaatcttaa      120
tgcagaattg ggatgcagcc atggaagacc ttacacggtt aaaagagacc atagataata      180
attctgtgag ttctccactt cagtctcttc agcagagaac atgggtcatt cactgggtctc      240
tgtttgtttt cttcaatcac cccaaaggct gcgataatat tattgacctc ttcttttatac      300
agccacaata tcttaatgca attcagacaa tgtgtccaca cattcttcgc tatttgacta      360
cagcagtcac aacaaacaag gatgttcgaa aacgtcggca ggttctaaaa agatctaggt      420
taaagggttat tcaacangga gtcttacnca tntaagaccc cattacngga atttggtgaa      480
tggttatatg taactttgac ttttaangggc tcaaaaaaag ctanaggggat gtgaatcaag      540
cttgngaagg ctttttttgg gggctngntt nngggtttnt tgnaaagncc ngtttttnnt      600
ttggaat
607

```

<210> 373

<211> 618

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(618)

<223> n = A,T,C or G

```

<400> 373
acttttaatg tttgctgttc aaacgaaaat agattggatc ttggttaagt tcacttggtt      60
tgccaggcca cagtggctca cgccctgcagt cccagcactt ggggaggtgg aggcggggccg      120
atcacctgag gtcaagagtt tgagaccagc ctggctaacg cggtgaaacc ccatttctac      180
taaaaaatata aaaaattagc tgggcgtggg ggtgcgcgct tgtaatccca gctactcggg      240
aggctgagggc aggagaatcg cttgagccag agaggcaaaag gttgcaataa gccaaagatag      300
cgccattgta ttccagcttg gacaacaaga gcgaaaactct gtctaaaaaa aaaaaaaaaa      360

```

cacacacaca	acacaatatt	ttcacgcctg	taaacctagc	acattgggaa	gccaaaggtgg	420
gaggattgct	tgaggccagg	agttcaaggc	ttgcantgag	ctatgaatgn	acactgnacc	480
tttggnncgng	aacacnctta	nggccaaatt	ccngcacact	tggggggccgg	tactaanggg	540
atcccanctt	tggnnccaaa	nttgngnaa	acatgggcaa	aattggtncc	tgngnaaaat	600
ggttccgttc	caaatccc					618

<210> 374  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(605)  
 <223> n = A,T,C or G

<400> 374						
accagctgc	tgcccacatt	tctgggtccag	agtcccgaac	cccagagcact	gggatgcctg	60
gctactccga	gcgttatcca	gactagcgag	tgggaggcag	atgtaaaatc	tggaacgcag	120
atttttagttt	ggttggaagga	gaaatgtaac	atagtgaacc	acgcattctct	ggaggggtgta	180
aagcagagac	agccaagagc	caaggcactg	atgtttgaac	tggaaacttc	aaaacgttta	240
ataagagtct	tcaggatggg	tttgaactag	acaagctaga	aatttcttta	gaacaccagc	300
tctagcatgc	atctcccact	tttggctttc	ctggagagga	gcttgaagag	gtgggttctgc	360
agacagccac	agtgatactc	aggaaaacnca	gaggaatgga	tttgactttt	ctgctaggaa	420
tctttggtat	aagttctcct	tgagttgtaa	gangcatgga	aatatacatg	aaactgaana	480
acctgcaagg	aanggaaatg	ggaacntttc	atctgagtgn	aaactaacca	agtnggcaat	540
ttngacttga	aacccttgaa	accttcnagt	ccaantcctg	gtttggggga	taaangaacc	600
ggnen						605

<210> 375  
 <211> 602  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(602)  
 <223> n = A,T,C or G

<400> 375						
acggatgcta	cttgtccaat	gatggtaaaa	gggtagctta	ctggttggtcc	tccgattcag	60
gtagaatga	ggaggtctgc	ggctaggagt	caataaagtg	attggcttag	tgggcgaaat	120
attatgcttt	gttgtttgga	tatatggagg	atggggatta	ttgctaggat	gaggatggat	180
agtaataggg	caaggacgcc	tcctagcttg	ttagggacgg	atcggagaat	tgtgtaggcg	240
aataggaaat	atcattcggg	cttgatgtgg	ggaggggtgt	ttaaggggtt	ggctagggta	300
taattgtctg	ggtcgccctag	gaggtctggt	gagaatagtg	ttaatgtcat	taaggagaga	360
atgaanagaa	gtaagccgag	ggcgtctttg	attgtgtagt	aagggtggaa	ggtgatttta	420
tcggaatggg	aagtgattnc	taaggggntg	tttgancccc	gtttgtgcca	gaatangaag	480
tggaatgctt	cttanggctt	caataaatga	anggcanaat	gaattgaaag	gtaaanaaac	540
cntnaagggg	ggacttggtta	ctgataaccn	tcctaaaatc	attgccccgn	aacttggccg	600
gg						602

<210> 376

<211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 376  
 acgcgggatc gaagaattca caaaaaacaa tagcctcatc atccccacca tcatagccac 60  
 catcaccctc cttaacctct acttctacct acgcctaate tactccacct caatcacact 120  
 actccccata tctaacaacg taaaaataaa atgacagttt gaacatacaa aaccaccccc 180  
 attcctcccc acactcatcg cccttaccac gctactccta cctatctccc cttttatact 240  
 aataatctta taaaaaaaaa aaaaaaaaaa aaaaaaaaaa ncaaaaaaaaaa aaaaanaaaa 300  
 aaaaaaaang tncngccatt tttngtttcn ggtaaacngg aatataangn gaaagaacaa 360  
 acnttggaac atacttaatg gatttttata gaactttgna aaccaaagga gattcatgtt 420  
 ttanaagtct ggcctttttt atatcttggg agaaaattat gtntggaggg tntaaataaa 480  
 tcccattatt ttctcagggg atctgggtag gaattgcccg catgggaant tttnnngggc 540  
 cggatnggaa agtttggcct aanaaatngc nctttntnaa naattttgga attttgggaa 600  
 gccnaagca n 611

<210> 377  
 <211> 367  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(367)  
 <223> n = A,T,C or G

<400> 377  
 acgcgggccg tttggcatct ctgccctcat cgtggggttc gactttgatg tcaactcctag 60  
 gctctatcag actgaccctt cgggcacata ccatgcctgg aaggccaatg ccataggccg 120  
 ggggtgccaa tcagtgcgtg agttcctgga gaagaactat actgacgaag ccattgaaac 180  
 agatgatctg accattaagc tggatgatcaa ggcactcctg gaagtgggtc agtcaggtgg 240  
 caaaaacatt gaacttgctg tcatgaggcg agatcaatcc ctcaagattt taaatcctga 300  
 agaaattgag aagtatgttg caaaaaaaaaa aananaaatn aaanaagtac ctcggccgng 360  
 accacgc 367

<210> 378  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 378  
 ggtacctgga tctgtctcct ctggggttgaa acccgggcgc cgccaagatg ccggcttacc 60



```

actcttctct catggatcct gataccaaac tcatcggaaa catggcactg ttgcctatca 120
gaagtcaatt caaaggacct gccccagag agacaaaaga tacagatatt gtggatgaag 180
ccatctatta cttcaaggcc aatgtcttct tcaaaaacta tgaaattaag aatgaagctg 240
ataggacctt gatatatata actctctaca tttctgaatg tctgaagaaa ctgcaaaagt 300
gcaattccaa aagccaagggt gagaaagaaa tgtatacgct gggaatcact aattttccat 360
tcctggagag cctgggttttc cacttaacgc aatttatgcc aaacctgcaa acaaacaggg 420
aagatgaagt gatgagagcc tatttacaac agcttaagggt caagaaactg gactggaact 480
ttgtgaagaa gttttcgacc cttagaatgg ttaaaccnac agtgggggga cttgcttttg 540
gaaaanaccg tttattgacn anagtttttt tggactggan atgaaaggng cccnggttng 600
ccccggtttn n 611

```

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<210> 379
<211> 602
<212> DNA
<213> Homo sapiens

```

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<220>
<221> misc_feature
<222> (1)...(602)
<223> n = A,T,C or G

```

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<400> 379
acagctgggt ggacctattc atgcatcttc accagcagct ggagcatctc cacccttgggt 60
atcttctggtg taaattactt gagctctgtg ctttgaaacc agtttgataa gtccctttact 120
aaggagctcc tgaagggtctg ccctggccag ggagcctcga atcttcagtc tctcagagac 180
cacagctggg gttataagtt tatagttggg aacttcctta cagagtttat cataggtagc 240
tttgtcaaac aagactaagt tattgagctt gtcccgaact ttgccttttg accactttct 300
ctttttggcc ttgcccccggt atttgttcac tgggtctttg nctttcttgg ccgactttcc 360
agcgtccttc ttcttcttgt cgtccttagg cggcattgcc aagctcggag aatagcanca 420
gacacngnaa cctngtcaag atgtcngaca aaaagccccg ggtaccttgg gcgngaacac 480
gcttaaggcg aattccacac actggcggcc gtactanggg gatccagctt nggaccaact 540
tggnggaaac atggcnaact gnttcctngn ggaaaatgtn atccgttaaa attncccaa 600
at 602

```

```

<210> 380
<211> 598
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(598)
<223> n = A,T,C or G

```

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<400> 380
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ggccttagat tttttactgt ctctgaaga atttaacaca aacatggata tcagaccaaa 120
tcatacaatt tatatcaaca atatgaatga caaaattaaa aaggaagaat tgaagagatc 180
cctatatgcc ctgttttctc agtttgggtc tgtggtggac attgtggctt taaagaccat 240
gaagatgagg gggcaggcct ttgtcatatt taaggaaact ggctcatcca caaatgcctt 300
gagacagcta caaggatttc cattttatgg taaaccaatg cgaatcagta tgcaaaacag 360
attccgata taatatcaaa aatgcgtgga acttttgttg ccaagaaaag aanaaagaaa 420
agaaaaagnc caaacttggg aacaactgna caaccncaac caaaaanctg ggcnnngggac 480

```

tccaaatcac	ttatacccag	ggaattcacc	ccnaatctta	ggteectgata	ccttcaacta	540
tatttaaatcc	ttaaaaactta	nccgaagagc	taatngatga	tgtntcctgc	cggtaacn	598

<210> 381  
 <211> 631  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(631)  
 <223> n = A,T,C or G

<400> 381						
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tgattgtgca	gaatacactg	cctgtcgctt	gtcttctatt	caccatggct	tcttctgata	120
tccaggtgaa	agaactggag	aagcgtgcct	caggccaggc	ttttgagctg	attctcagcc	180
ctcgggtcaaa	agaatctggt	ccagaattcc	ccctttcccc	tccaaagaag	aaggatcttt	240
ccctggagga	aattcagaag	aaattagaag	ctgcagaaga	aagacgcaag	tcccatgaag	300
ctgaggtctt	gaagcagctg	gctgagaaac	gagagcacga	gaaagaagtg	ctttagaagg	360
caatagaaga	agaaccacaa	cttcgtaaaa	atggcngaag	aagaaactga	ccnccaaaat	420
gggagcttat	taaagagaa	ccagangnnc	caatngnttg	gccaactggg	accgtttgca	480
anaagaaggg	ttagcccent	tgaanaaatg	ccggaagaac	caaagaattc	caagaccctt	540
gntgcnaaac	ttgaacttgc	ctaattgggc	ttgagaactg	cttttttccc	atcccttcta	600
aaatccaaaa	atgnacctgc	ccggggggcgg	t			631

<210> 382  
 <211> 613  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(613)  
 <223> n = A,T,C or G

<400> 382						
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tactgataac	ttaacatgct	ggaaacctgg	taatgtttct	atgactttat	tttctaacat	180
cttctttaaa	tctttaggca	tagcatgctc	tttggcagct	ctcaaggagg	gctgtttcca	240
tgtggctcca	agttccttga	actgctggct	gcactgagtg	gactgtctgt	gtcttgagag	300
ggagctgcat	tttcattgac	ttatgggtccc	acaagtgacc	ctgaggcaan	gtcnaattgg	360
tctncanaac	atttttggcc	ctctcttctc	ctttttgact	tttctgagac	tgacagtctt	420
tttganggaa	tccaggggna	angcttccnt	ctctaattggg	ggntaaattc	attttccaaa	480
anggnccggtt	tttgggaaaa	tnaaanttga	aanggcaccc	nttttattaa	tgcccnanc	540
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attcaaatag	ctt					613

<210> 383  
 <211> 628  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(628)  
 <223> n = A,T,C or G

<400> 383  
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 tcaaataaag cttaacatta tgcagggtct ataatacatt tcagcaacgg actgcaagct 120  
 gcaactgtgaa gaaaatgcat agcagaggag aaagctgggg atctgaggaa ataggtaagg 180  
 aaaacagtgt caacacacag tgggaagaagt gatgaagaca tctattccgg agctcacgtg 240  
 ccatgccctg ctagcgttcc ttaacaagcc acctgctcca gaaggccaca gcctgaccct 300  
 cccaagtggga atataaatgc ccaagtgcc catgaagcca ccttctncac tacctaaaaa 360  
 ggttggtctgg gactgagctc agaacacaca cctttctggg ctaccaaacc ttaagtggga 420  
 aagaattttt tntaaatat ctanttttna taccactttt aacgccactt ttatattgaa 480  
 attgggcttc taattagncc ctttctcctc ttccttagga nggaactcat aatgggagcc 540  
 aaccaaccag ggattctacc cccaatngac tgnnctttaa angattattt aattttgang 600  
 ggcaaaggtg tgaatgggtt acaatacc 628

<210> 384  
 <211> 620  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(620)  
 <223> n = A,T,C or G

<400> 384  
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 acaaaataaa aaagtattaa agcgaagatt aaaaaaattt tgcattacat aatttacacg 180  
 aaagcaatgc tatcacctnc cctgtgtgga cttgggagag gactgggcca ttctccttag 240  
 agagaagtgg ggnggctttt angatggcaa gggacttctt gtaacaatgc atctcatatt 300  
 ttggaatgac tattaataaa acaacaatgt gcaatcnaaa gtctcgggcc atttgcgga 360  
 ctttgggggg atgcttgctt cnaccgantt ggtgncaacc tttnnccggg tccanttttt 420  
 naaattctta gtnnaagcnn aaaaanntag aatancnna nancataact tannaancca 480  
 tttaanaggt cctcggccg gaacnnctt aanggtnaat cccantnnnt ggcgggctgt 540  
 actncnggat ccanccttg nnccaaantn gnggaattca tggcnnaacc gntcctgggn 600  
 gaantngttn ccttnaaanc 628

<210> 385  
 <211> 535  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(535)  
 <223> n = A,T,C or G

<400> 385

ggtacttttt	tttttttttt	tttttttggt	atthagtttt	tattttcataa	tcataaaactt	60
aactctgcaa	tccagctagg	catgggaggg	aacaaggaaa	acatggaacc	caaaggggaac	120
tgcagcgaga	gcacaaagat	tctaggatac	tgcgagcaaa	tggggtggag	gggtgctctc	180
ctgagctaca	gaagggaatga	tctggtggtt	aagataaaac	acaagtcaaa	cttattcgag	240
ttgtccacag	tcagcaatgg	tgatcttctt	gctggtcttg	ccattcctgg	acccaaagcg	300
ctccatggcc	tcacaatatt	catgccttct	ttcactttgc	caaacaccac	atgcttgcca	360
tccaaccact	cagtcttggc	agtgcagatg	aaaaactggg	aancntttgg	ggtngggncn	420
acatttgcc	tggccaaaat	gccnggaacc	ggccccgtac	cttgncnngg	ccggccggtt	480
caaaagggcg	aattccacac	acttggcggg	ccgtactang	gggatccaac	ttcgg	535

&lt;210&gt; 386

&lt;211&gt; 642

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(642)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 386

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ctacacaaga	ttaataccat	ccagcatcag	gatatagctg	tggattttac	aaaccattct	120
tattttctaac	ttcaggagtt	gatgtttttc	ccagtcctac	ttaaaatatt	actgctttta	180
tcacagatca	ggtaaaaagg	acaacatgca	caacctccac	ctagaatcct	gttgtagcct	240
agacagtga	atgatatgac	atcagaagac	tttaaaattg	cagctccttt	tggatcccc	300
aaagtgtatc	tgcactcttc	ttcaaacggg	ccctctttcc	tcaagaagtc	agaagtcacc	360
ttcacaangn	ctgagaattc	cattctgnnc	ccaaantgca	agggacactn	aaggaagaca	420
tcattctttt	attccgtnaa	agacccttaa	ttcatgggng	gaaactgggt	gcacccgcct	480
nagaatcttt	attanactct	ttgnccaatt	tggttacaga	agagntncan	tancccccang	540
aannnggtagc	ctttggagtt	tgantcacc	tcataagcac	ccttaaacca	cctgnttggg	600
gaaccttctt	tcactggtcc	ctaactttat	tangccctaa	ag		642

&lt;210&gt; 387

&lt;211&gt; 256

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 387

ggaccttttt	tttttttttt	tttttttttt	tgaaaagaaa	ggccttacat	atattattact	60
gaatccagcc	aaccaacgtg	ttcataacag	attcagagag	gaaaacacgt	cgaaatctcc	120
agatagtggt	gacattttca	gcttgatag	gtaacatgat	cgtgaccttc	agacagcata	180
aatatgtgtg	ccatctcatg	tgcaattcct	tatagaccca	gcttggttct	tctccaatgt	240
ctccttttgg	agttgt					256

&lt;210&gt; 388

&lt;211&gt; 566

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(566)

<223> n = A,T,C or G

<400> 388

ncnagcggcc	gcccngncng	gnactgaaca	ttggtaaaaa	attatatgag	ggtaaaacaa	60
aagaagtcta	cgaattgtta	gacagtccag	gaaaagtcct	cctgcagncc	aaggaccaga	120
ttacagcagg	aaatgcagct	agaaaaaac	cacctggaag	gaaaagctgc	natctcaa	180
aaaatcacca	gttgtatatt	tcagttatta	caggaagcan	gtattaaaac	tgccttcacc	240
agaaaatgtg	gggagacagc	tttcattgca	ccgcagtgtg	aaatgattcc	aattgaatgg	300
gtttgcacaa	gaatagcnac	tggttctttt	ctnaaaagaa	atcctggngt	caaggaagga	360
tataagtntt	acccccctaaa	gtggagntgt	ttttcaagga	tgatgccc	taatgaccnc	420
cagtcgggct	tgaagaacna	cttgattgct	gcaaaaattt	gcttttcttg	gacttcttat	480
anggcnaacc	tgaaanggat	ttcatgaagt	catgctacnc	aggctatatt	tgaaatctgg	540
gagaaatcct	ggttgccccaa	aattgg				566

<210> 389

<211> 629

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(629)

<223> n = A,T,C or G

<400> 389

actttttttt	tttttttttt	ttttttgttt	tttttttttt	tttttttttt	ttttttttgc	60
agtttctaag	tcattacttt	tnattttgaa	agatttgnga	aactnttcac	atcatgggtga	120
gagtttgtat	gattaataan	aagcagcttt	ttcatgaaat	gcttggaggt	gaacgagttt	180
tcagcctgng	anatecgacc	ntcccattaa	ctttgaagtt	tctcttgatt	aatagaagaa	240
aaaaggggag	ggtgaanaaa	aggaggaaca	tgctaaaaac	cttatgacaa	tcatccaaat	300
gtgaggaaaag	aacaaccgga	ttcaccaact	ccactttttc	tattttacaa	ctttctacat	360
ctcacncttg	gattttggcc	ttcntggctn	aaacantcct	ggcantccnt	tanagcccct	420
gaaaaagagc	cntggntttt	ncaaaagacn	ntnggnnggn	gaannccctn	annatgcctt	480
gaccnttctn	cnaagaactn	nntntccggg	ntcccaaaag	tttgacccan	cagcttantg	540
tgaannnaaa	actnnccttn	aaaggtaatg	gngngaanng	gtgannaant	gggttttttt	600
ganaagtctt	ntttttctna	aaaccnccg				629

<210> 390

<211> 596

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(596)

<223> n = A,T,C or G

<400> 390

actttaattt	atttcccctt	tctagtgtat	taagaaatga	catgcacttt	aatttgccaa	60
aagcaatgct	tgtattctgg	cagcaacatg	ctacttctat	cacatagtaa	agtgaatacc	120
agaactacaa	aggcaggagg	tgtaagtga	tttttattgg	gaggggaggt	tggcaactta	180
aacagcagca	aataaagagt	gaataaggaa	actccctgtt	gccacagata	cacaagacct	240
ccgtatgtga	tacaggagcc	atttcaattt	gtgaccctta	gacagagatg	gcaagtgtct	300

ttccattcaa	tctaatactt	ccggattcct	actaaaaagg	aatcattaag	agcatggaaa	360
agttgcttac	tggaaaggaa	acccccgaag	agtaagggaa	gggaatgtga	aattaagaag	420
ttatgtggaa	tctcttaaat	tgnaattact	acatttctta	atttccaggt	atnccaaaca	480
cagtcenntg	caaaactggg	cagntactta	aatnccngat	ccattttagg	cnttacataa	540
gtgtttggga	gtacctatgg	tatttnaatg	aactttttaa	ctttnttccg	ccgtcc	596

&lt;210&gt; 391

&lt;211&gt; 625

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(625)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 391

acacacccag	gaaatttgtc	atccaccctg	agagtaacaa	ccttattatc	attgaaacgg	60
accacaatgc	ctacactgag	gccacgaaag	ctcagagaaa	gcagcagatg	gcagaggaaa	120
tggtggaagc	agcaggggag	gatgagcggg	agctggccgc	agagatggca	gcagcattcc	180
tcaatgaaaa	cctccctgaa	tccatctttg	gagctcccaa	ggctggcaat	gggcagtggg	240
cctctgtgat	ccgagtgatg	aatcccatte	aagggaacac	actggacctt	gtccagctgg	300
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tntgtgctgg	tgggtgtngn	canaggacct	ngntnctaaa	accnccgnnt	tgggcaatgg	420
ggctttcgtc	taattnttac	aannttgntg	accaatnggg	gatnaactgg	anntttttgn	480
tcaanactnt	tttggaaata	tntccctnnt	gcnattngcc	ntatttctcg	gggaanggtg	540
ttnatatngt	natggnnaaa	cntntanceg	nnntntaatc	ttggaatata	tatnaatacc	600
ttcttaaaan	ntgntnatta	tcctt				625

&lt;210&gt; 392

&lt;211&gt; 266

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 392

ggtacccata	ttgctaattgc	taggatcaag	ataccacata	gccagaacaa	gaagttgaag	60
gtaaacaatg	aatattttat	acaggcactc	acacctgcca	tttcggaaaa	ggattaggaa	120
tccagatgcc	gtgaatttaa	ctattcgta	caggcttgct	ctgcaatatg	ctctggagca	180
acttgccctg	agagattttct	gtatccacgg	cttcagagca	gaaagagaaa	gcaaagaagt	240
agagggagga	ataaaaaatcc	ccgcgt				266

&lt;210&gt; 393

&lt;211&gt; 611

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(611)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 393

ggtacttttt	tttttttttt	tttttttttt	tggttttacc	tggtttttatt	ccttaaaaga	60
------------	------------	------------	------------	-------------	------------	----

aaaaaacaac	ttaaatgcat	acatacagaa	tagaatacac	ttacttaagt	tttgacagtg	120
aaaaaaaaata	attacagggt	agatatttaa	tccaagggtt	aacatgggga	tgatctcata	180
aggcaatttc	tttcccttaa	taaatattaa	agtgaatatt	attctggaag	caaatacatc	240
cctaattctt	catcagcaaa	atcatcctca	tcgatccttt	tcttggtctg	agtttttggt	300
cgttctat	gagggccaag	tgggtccaca	taggaggcat	ctatttcttt	gntactgcta	360
ctttcataag	gntcatttgt	cccaggtaaa	agctctgagt	ctggccttan	tccgtcacc	420
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cnggagcccc	caatgcant	ttngcntgac	tttagcnng	gnccctaatt	cttcattttt	540
ccacctttna	gnttttggca	antcttgagc	cntttttaat	cnaagacttn	gcanagccaa	600
ttaaaaaccc	c					611

&lt;210&gt; 394

&lt;211&gt; 340

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 394

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aagaagagat	tttaaacaaa	aaacgatcta	aaaaaattca	gaagaaatat	gatgaaagga	120
aaaagaatgc	caaaatcagc	agtctcctgg	aggagcagtt	ccagcagggc	aagcttcttg	180
cgtgcatcgc	ttcaaggccg	ggacagtgtg	gccgagcaga	tggctatgtg	ctagagggca	240
aagagttgga	gttctatctt	aggaaaatca	aggcccgcaa	aggcaaataa	atccttgttt	300
tgtcttcacg	caaaaaaaaa	aaaaaaaaaa	aaaaagttacc			340

&lt;210&gt; 395

&lt;211&gt; 557

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(557)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 395

acacatcttc	aaagcacttc	cctttaacgg	gaaacttagc	tttatgggat	ttaaacatta	60
gaaagtggga	aaaaaaattc	cattttcttg	tcattataaa	ccaaaacaaa	atctagtgtg	120
agtcaaggaa	actcattcac	acttcaggtc	cttctcctcc	aggaaccagc	attgttatat	180
tatttccatt	tagcaaaatc	tgatgtaatt	tagtaatcct	tcttccttct	ggtgtgattt	240
caaaactcag	gacatcttcc	agtactttnt	tttttttttt	tttttttttg	gtgttgagct	300
tggacgcttt	cttaattggg	ggctgctttt	aggcctacta	tgggtgttaa	atttttactc	360
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aaaattacca	nggggattta	aaangggnt	tgngggccaa	attnaaagtt	ngactangan	480
tctatttttg	gccaaccagt	nttaaccagg	cttcgggtang	gttgggccgc	cccgggtacc	540
ttgggcccgg	aacacnc					557

&lt;210&gt; 396

&lt;211&gt; 617

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(617)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 396

ggtacngcgg	ggccactcga	gtgcgcaggc	gcctggcgat	taccgggtctc	accatggagc	60
ggaaagtgt	tgcgctccag	gcccgaaga	aaaggaccaa	ggccaagaag	gacaaagccc	120
aaaggaaatc	tgaaactcag	caccgaggct	ctgctcccca	ctctgagagt	gatctaccag	180
agcaggaaga	ggagattctg	ggatctgatg	atgatgagca	agaagatcct	aatgattatt	240
gtaaaggagg	ttatcatctt	gtgaaaattg	gagatctatt	caatgggaga	taccatgtga	300
tccgaaagtt	aggctgggga	cacttttcaa	cagtatgggt	atcatgggat	attcagggga	360
agaaatttgt	ggcaatgaaa	gtagttaaaa	gtgctgaaca	ttacacttga	aaccagccta	420
gatgaaatcc	ggttgcttga	agtcagttcc	aattcagacc	ttatggatcc	aaatngaaaa	480
atggttgtca	actactagat	gacttttaaaa	ttcaggagtt	aatggaacac	atatttgcac	540
gggatttgaa	gttttggggc	anattngtta	agnngttctc	aatcaatttn	ttangggcct	600
tcctgccttg	ggtnaaa					617

&lt;210&gt; 397

&lt;211&gt; 594

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(594)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 397

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tggggctgct	aatgctctgg	gtcccagggt	ccagtgggga	ccgtcgtggg	gactcagctc	120
ccggtctccc	tgcccgtcac	ccttggacag	ccggcctcca	tctcctgcag	gtctggtgaa	180
actctccttt	acgaagatgg	aagcacctac	ttgagttggg	ttcaccagag	gccaggccaa	240
tctccgaggg	gcctgattta	taaagtctct	aaccgggact	ctgggggtccc	agacagattc	300
agcggcagtg	ggtcaggcac	ttattttcacg	ctgaaaatca	acagggtaga	ggctgatgat	360
gttggggaatt	attactgcat	gccanggtca	aactggcccc	tactttttcg	gngaaggacn	420
aaagggtggc	natcaaacca	actgnggctt	gaccattggc	ttcatnttcc	cgccatttga	480
taaccantga	aatctggact	gctttgtggg	ngcctgctga	aaacttntat	nccnanaggc	540
cnaagtcatg	acagtttttc	natttactcg	aaaaatntgg	aatgataat	tttn	594

&lt;210&gt; 398

&lt;211&gt; 611

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(611)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 398

acagtgggtc	ttttcagagt	tggacttcta	gactcacctg	ttctcactcc	ctgttttaat	60
tcaaccacgc	catgcaatgc	caaataatag	aattgctccc	taccagctga	acaggggagga	120
gtctgtgcag	tttctgacac	ttgttggtga	acatggctaa	atacaatggg	tatcgctgag	180
actaagttgt	agaaattaac	aaatgtgctg	cttggttaaa	atggctacac	tcactctgact	240



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cattctttat tctatttttag ttggttttga tcttgccctaa ggtgcgtagt ccaactcttg 300
gtattaccct cctaatagtc atactagtag tcatactccc tgggtgtagt tattctctaa 360
aagcttttaa tgtctgcatg cagccagcat tcaatagtga atggntcttc tttggctgga 420
attaccaaac tcagagaaat gnggcacatc gagaacatct taaccccatg aanggataaa 480
agcccccatt ggnggggact tgataatagc nctaatagtt taaanatttg gtccactttt 540
tacctaaggt gageccattg aaccannngt gctaaangct catacttcca actgaaatgg 600
ttaaggaaaa a 611

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<210> 399
<211> 614
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(614)
<223> n = A,T,C or G

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<400> 399
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tggacgctga ctgggacacc aagcatgtcc tcactggctc agctgacaac agctgtcgtc 120
tctgggactg tgaacagga aagcagctgg cccttctcaa gaccaattcg gctgtccgga 180
cctgcggttt tgactttggg ggcaacatca tcatgttctc cacggacaag canatgggct 240
accagtgtt tgtgagcttt ttgacctgc gggatccgag ccagattgac aacaatgagc 300
cctacatgaa gatcccttgc aatgactcta aaatcaccag tgctgtttgg ggacccctng 360
gggagtgcac catnctggcc atgaaaagtg gagagctnaa ccagtattag tgcennagtt 420
tnnanaaggt gttngttnaa tgtaaaggga gcantttccg gnagaataac cnacnttcag 480
gttattccnn gganatgacc anngtttnga ccccttnnna gtccattaat nccnaacttt 540
tttacnctca aattttnaa tnanaaaact tttngnatna aattnttnaa ttanttggtc 600
tttttcaata tnnn 614

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<210> 400
<211> 612
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(612)
<223> n = A,T,C or G

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<400> 400
acttacactg tgaaatttta tgatggagta gttcagactg tcaaacatat tcatgtcaaa 60
gctttttcca aagatcaggc ctaaagaaac agatcacaaa agtctttcat catctcctga 120
taaacgagag aagtttaaag aacagagaaa agcaacagtg aatgtgaaga aagacaaaaga 180
agataaaccc ttaaagacag aaaagcgacc caagcagcct gataaagaag gaaagttaat 240
ctgttctgaa aaggggaaag tgtcagagaa aagtcttccc aagaacgaga aggaagacaa 300
ggaaaacatt tccgaaaatg acagagagta ttctggagat gcccaagtgg ataagaaacc 360
tgaaaatgac attgtgaaga gtccacaaga aaacttgagg ggaaccnaaa ngaaaacgag 420
gcagaccccc ttccatagct nctactgctg gggattnaaa ctttaaactt tggcacccat 480
acctttggac ttnnnanaag gaaaatttca naggggtgta agtcctttta accgtccttg 540
gttgncaaaa ntttttncng ggaaagtcaa aaacttcttt gaaaaccttg ccnangattt 600
ttnngngnac nt 612

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<210> 401  
 <211> 601  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(601)  
 <223> n = A,T,C or G

<400> 401  
 ggtagcggtaa ctgactccag ggtagcactcat actgtgtccg tggtaacggg aagtctgcag 60  
 ctccatcagg atgggcccct tcccagatct acaataggca gcagcaaac ttgttgccct 120  
 tcggacgcac aggatatcca ttccatccac tctcagccca ggaatgaaat cgcctctctt 180  
 gtagtaatat gtgctggctg ccgctctctc aacagacgtt cccattccat agcgattatt 240  
 ctacacagatg aaaatacaag gtaatttcca caaagctgcc atgttgtaag cttcgaatat 300  
 ctggccctgg ttagcagcac catcgccata taaagtcagg cagacctcat cttttccatt 360  
 atacttacag gctagagcaa tcccagcgcc caagggcacc tgcgctccta cgatgccatg 420  
 gccccgtana agtcttggca tacatgtgca tcgatcctcc ttccttttagc acaanctcct 480  
 tttgncctgt aactgcaaaa tttntcggac ggaaaggccc cggtgnaaag taaagccgtg 540  
 agcccggtag gctgngatna aanggcttgt ggggttnaag cccggcttca ggtcccacag 600  
 a 601

<210> 402  
 <211> 600  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(600)  
 <223> n = A,T,C or G

<400> 402  
 acctggagaa gatcaaacag cgactgtttg agaaccttag aatgctgccg cagcacctg 60  
 ggggtccaaat gcaggcgatt cctgaggacg ccatccctga ggagagtggc cgatgaggac 120  
 gaagacgacc ctgacaagcg catctcgatc tgetcctctg acaaacgaat tgctgtgag 180  
 gaagagtctt ccgattctga agaggaggga gagggggggc gcaagaactc ttccaacttc 240  
 aaaaaagcca agagagtcaa aacagaggat gaaaaagaga aagacccaga ggagaagaaa 300  
 gaagtcaccg aagaggagaa aaccaaggag gagaagccag aagccaaagg ggtcaaggag 360  
 gaggtcaagt tggcctgaat ggacctnttc agctctggct ttctgctgag tccctacgtt 420  
 ctttcccaac cccttaaatt tataatttct attctctggg gatttatata aaaatttatt 480  
 naatnttaat attcccaggg cccgaaacca agggcccgaa ctnaaggnaa ntttgcttgg 540  
 gtgagctntt tcaagaacca ccttgacacc atttttccgt cttaacttta accaaaangg 600

<210> 403  
 <211> 604  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(604)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 403

actcagtggg	tgacgagtg	ttgggtgaaat	tggttgaaagg	cctgtgtctg	aaatacctgg	60
gccgtgtcca	ggaggccgag	gagaatttta	ggagcatctc	tgccaatgaa	aagaagatta	120
aatatgacca	ctacttgatc	ccaaacgccc	tgctggagct	ggccctgctg	cttatggagc	180
aagacagaaa	cgaagaggcc	atcaaacttt	tggaatctgc	caagcaaaac	tacaagaatt	240
actccatgga	gtcaaggaca	cactttcgaa	tccaggcagc	cacactccaa	gccaagtctt	300
ccctagagaa	cagcagcaga	tccatgggtc	catcagtgtc	cttgtagctt	tgtgcagcag	360
ttccgggctg	gaagacagag	acagctggac	agagctcctg	aaaacatttc	aaaaataccc	420
ccttcccctg	gcctgcctg	cctttggggt	ccancggcac	ttcagttgga	tggcacaacc	480
tantgtatcc	gtgcnnaaan	cnaacctggc	attttcaccc	anntanccaa	gggcttttgc	540
caagggnana	acagtggagc	ccttggtctg	ncctataaac	atacgggtac	cttggtccggn	600
acnn						604

&lt;210&gt; 404

&lt;211&gt; 604

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(604)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 404

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aatggaacag	gtaaccagca	tgtaaaatca	aaatataagt	gtctttttta	gagctgaaag	120
ctgctgctgg	tcattcatta	atgtgtcaga	cattttaatca	ggatgctgga	ccttcaaaat	180
aactgaaaaa	agaaccaaga	aaaggcggtt	ttgtttttcaa	caaactttac	taaataaccc	240
cggaaaggca	atgaacgatc	tgacaattta	agctctaata	atttaaagct	cagctagaag	300
aaagtgaggc	atgacatata	ctgtcaacgg	aggggtgaagg	aggcagattt	ctggaaatgc	360
aatgatccca	cacatttgct	tcaaggagaa	acctgcagac	atattttcag	gtcttgctaa	420
gtaacaactg	gttatttgta	atcaatcatt	tgggaaagtc	tgctatgtag	ctaanggcac	480
tgtgaccccn	gacaacngat	gaaaaggaaa	aagcmttgac	agcaggaaaa	atccttccat	540
cttaaagaat	ttaggggaca	ccttttaaagg	aaaaaaattg	ntccagcctc	attttttacaa	600
ntnt						604

&lt;210&gt; 405

&lt;211&gt; 593

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(593)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 405

acttgcattt	caaagcttat	aagatataaa	tggagatttt	aaagtagaaa	taaatatgta	60
ttccatgttt	ttaaaagatt	actttctact	ttgtgtttca	cagacattga	atatattaaa	120
ttattccata	ttttcttttc	agtgaaaaat	tttttaaattg	gaagactgtt	ctaaaatcac	180

ttttttccct	aatccaattt	ttagagtggc	tagtagtttc	ttcatttgaa	attgtaagca	240
tccggtcagt	aagaatgccc	atccagtttt	ctatatattca	tagtcaaagc	cttgaaagca	300
tctacaaatc	tcttttttta	ggttttgncc	atagcatcag	ttgatcctta	ctaagttttc	360
atggggagac	ttccttcatc	acatcttatg	ttgaaatcac	tttctgtagt	caaagggtata	420
ccaaaaccaa	tttatcttga	actaaattct	aaagtatggg	tatccaacca	tatacatctg	480
ggtaccaaac	ataaatgctg	acattcntat	attatagtna	aggcttaatc	nacttgcagg	540
tgaatggaaa	aaaaataagc	ttnaacctag	gattctggaa	tgaggaatgc	tcn	593

&lt;210&gt; 406

&lt;211&gt; 591

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(591)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 406

actttttttt	tttttttttt	tttttttttg	ggactgaatc	ttgctctgtc	gcccaggctg	60
gagtgcagtg	gcgcaatctt	ggctcactgc	aacctctgcc	tcctgggttc	aagtgggttct	120
catgcctcag	cctcctgggt	agctgggatt	acagacaagc	accaccacaa	ccagctagtt	180
ttttttgttt	tggttttttg	agacggagtc	tcgctctgtc	accaggctgg	agtgcagtgg	240
cacaatcttg	gctcactgca	acctctgcct	cctgggttca	agagattctc	ctgcttcagc	300
ctnccaagta	gctgggacta	caggtgcaca	ccatcacacc	tggttaattt	ttgtattttt	360
aagtanagac	ggggtttcac	catggtggcc	aggctggctc	caaactcctg	acctcaagtg	420
aaccggccgc	ttancctcca	aagtgctggg	attacaggcg	tgagcccact	ggcctggctg	480
accatttggt	tattaacagg	gcccccaana	tgcnccttta	ngtgaaaggg	natggcccca	540
gggaacaatt	nngctgaaaa	acaccaaagg	ccnantccat	aattcnttgg	n	591

&lt;210&gt; 407

&lt;211&gt; 463

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(463)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 407

ggtactgatt	ttaaaaacta	ataacttaaa	actgccacac	gcaaaaaaga	aaaccaaagt	60
ggtcacaaaa	acattctcct	ttccttctga	aggttttacg	atgcattggt	atcattaacc	120
agtctttttac	tactaaactt	aaatggccaa	ttgaaacaaa	cagttctgag	accgttcttc	180
caccactgat	taagagtggg	gtggcaggta	ttagggataa	tattcattta	gccttctgag	240
ctttctgggc	agacttggtg	accttgccag	ctccagcagc	cttcttgtec	actgctttga	300
tgacacccac	cgcaactgtc	tgtctcatat	cacgaacagc	aaagcgaccc	aaagggtggat	360
agtctgagaa	gctctcaaca	cacatgggct	tgccaggaac	catatcaaca	atggcagcat	420
caccagactt	caagaattta	nggccatctt	tcccgggtac	ctg		463

&lt;210&gt; 408

&lt;211&gt; 588

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(588)

<223> n = A,T,C or G

<400> 408

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agctctctta	ttgttatccg	aggtaacag	gctgcaactg	tcaaggggat	gttctcacca	120
aaaggggggt	tgggggaaga	ggacacacac	aaagctaata	aaaccagaat	ccccatcccc	180
acaaaactca	tgggaacaaa	atttaaagga	taaaacaaaa	cccaccaaga	cccatattac	240
aaaccaatat	ggtaacctgt	gttcccttct	atggatatgt	tatgtcatgt	taccttagtg	300
ttaaaagatt	aacataagga	aactgcagca	atatataaaa	gatataattct	ctatagagca	360
tatttcgatt	gattccatta	aaataatgac	attagaattc	catcatangg	ttaaaaccag	420
gacaatactg	nttttntctt	atttaaaaaa	aactaccacc	taatgactgn	attgggcata	480
acctgaatgg	tgtgcaatgg	gctcttccat	gaatggctgg	cngaaacaag	cttgggnctt	540
gcttgagttt	cagcttttct	ctttaattta	gtngctcaat	gataaaca		588

<210> 409

<211> 612

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(612)

<223> n = A,T,C or G

<400> 409

ggtacaaaga	tctgacatgt	cacccagggg	cccatttcac	ccactgctct	gtttggccgc	60
cagtcttttg	tctctctctt	cagcaatggt	gaggcggata	ccctttcctc	ggggaagaga	120
aatccatggt	ttgttgccct	tgccaataac	aaaaatgttg	gaaagtcgag	tggcaaagct	180
gttgccattg	gcctctttca	cgtgaaccac	gtcaaaagat	ccaggggtgc	tctctctggt	240
ggtgatcaca	ccaatttttc	taggttagca	cctncagtea	ccatacacag	ggtaccagtg	300
tcnaacttga	tgaaaatcaa	gtaatcntgg	ccagtctcta	aatcaaatc	ttgaatggta	360
tcaattcacc	cttgatgaag	gggaatcggg	ggtaaccctg	atgggtgccc	ggccttnatg	420
aagtcancca	natgaaggga	tctctttggg	gcccccaaag	aacttttttn	attttcacaa	480
cttgnacctt	gcccggcggg	ccgttcaaaa	gggcnaattc	cagncaattg	gnggccgtct	540
aanggatcca	actcggaaca	acttggcgna	anatggcaaa	ctggttctct	gggaaatggt	600
atccctccaa	tn					612

<210> 410

<211> 353

<212> DNA

<213> Homo sapiens

<400> 410

acgcggaagc	agtggtaaca	acgcagagta	acgcgggatg	gcacatgcag	cacaagtagg	60
tctacaagac	gctacttccc	ctatcataga	agagcttatc	acctttcatg	atcacgccct	120
cataatcatt	tctcttatct	gcttcctagt	cctgtatgcc	cttttcctaa	cactcacaac	180
aaaactaact	aataactaaca	tctcagacgc	tcaggaaata	gaaaccgtct	gaactatcct	240
gcccgccatc	atcctagtcc	tcatcgccct	cccatcccta	cgcctccttt	acataacaga	300

cgaggtcaac gatccctccc ttaccatcaa atcaattggc caccaatggt acc 353

<210> 411  
 <211> 612  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(612)  
 <223> n = A,T,C or G

<400> 411  
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 cgtaggctgc tgggaagatc tggattctcg tttaggtca ccatcagaaa agctaagttt 120  
 gctgtatagt gaggatcagg agatctgatc ctgattgcag aaccttcctt gattacagaa 180  
 tcttgggttg tatctccac ttcacccttc tagaccatcc cagaagatct ataagatttc 240  
 atctgggaaa tcaactaggag ttcttggaag ggaaagaagg aagattggtg gttggaataa 300  
 aaacagggtt gaatgagttc cagaaagcnn ggttctcaac ctctgggaca gcaatctgca 360  
 gaagangaga acttcaaaaa accnactana agcancttgc anagaagtaa aatgagaagg 420  
 ggncttctna ngaaagaaga cacttggncc acagcagaaa aaactttgac cnantnttnc 480  
 caggaagana gggggggtcc cnccttttaa naacccctt taagatncng gnggaanacc 540  
 tcanngacca ncntaaatt nnggaaaccg aaaaggggcn gtcctttttg ntncagntg 600  
 cncnttaan nt 612

<210> 412  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(607)  
 <223> n = A,T,C or G

<400> 412  
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 gcaatccctg acgcaccgcc gtgatgccca gggaagacag ggcgacctgg aagtccaact 120  
 acttcttta gatcatccaa ctattggatg attatccgaa atgtttcatt gtgggagcag 180  
 acaatgtggg ctccaagcag atgcagcaga tccgcatgtc ccttcgctgg aaggctgtgg 240  
 tgctgatggg caagaacacc atgatgcgca aggccatccg agggcacctg gaaaacaacc 300  
 cagctctgga gaaactgctg cctcatatcc gggggaatgt gggctttgtg ttaccaagg 360  
 aggacctcac tgagatcagg gacatgttgc tggccaatna ggtgcccagc tgctgcccgt 420  
 gctggtgccc atttgcccat gtgaangtca cttgtgccc gcccataa cttgtcttng 480  
 ggcccganaa gaacttcttt tttccaggcn ttaaaatatt cacccttaa antttcaagg 540  
 ggcccattt gaaatcctgg annatnngca ttgatcaana ttganacaaa gtggnancnt 600  
 ccaacc 607

<210> 413  
 <211> 606  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 413

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ggagtgcagt	ggtgcgatct	gggtcactg	caatctccac	ctcccgggtt	caagcgattc	120
tcctgcctca	gcctcccag	taactgggac	tacagggtg	cgccaccaag	cccagctcat	180
ttttgtattt	ttagtagaga	tggggtttca	cgatgttggc	taggatgggc	tcgatctctg	240
gtcagagtct	tttctgtaaa	tatccttggg	aaagaagcaa	ttttagactg	tagctgttgc	300
aaatgcttta	aggaagaagc	anaacaactg	tcagtcttcc	tgaaatgaag	aaactacacc	360
agggctgcta	tatcagagca	accccaacca	gcactccaat	catgatgccc	gacagtggcc	420
ccagcttgag	aaccagagaa	gttccagatg	cagagactgt	gagctcntga	ctatgggaat	480
tttngnngcn	ntaaccnaan	tttgagacna	aacnaggcct	tngncccggt	tttnatttgg	540
gnngggattt	gcggataaan	aaacttgngg	gggntnctgc	ggnatccatg	gaacnccaaa	600
anatng						606

<210> 414  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(624)  
 <223> n = A,T,C or G

<400> 414

ggtacttttt	tttttttttt	tttttttttg	tagatgaggt	ctcgctatgt	tgcccaggct	60
ggagtgcagt	tattcacagg	tgcaaccaca	gggcactgca	gcttttaaact	cctgggctca	120
agcgatcctc	ctgcttcagc	ctcccaaata	ggtgggacta	gatgcacgca	cnaccacgcc	180
tgactcagga	cattattctt	aaaggtatta	tccaggaaac	agataagggtc	attcataaaa	240
cacacggntt	ttttctttag	ctcagtgtta	acaatgaaag	tagattccac	tattgaagca	300
caagttgcaa	attggtaaca	tagngaacat	attgntgtag	gaaaggggggt	tcagtgtgnt	360
gtgttatatn	agcncttgaa	ctttttatgg	gngtnataag	ccnngttatc	ttgncccaaa	420
gaaannccat	tttnaggatt	ngatggtttt	cttannggaa	nanncnnggg	ggnatnttgt	480
ngggcatgaa	cttttatgtg	ggaatcagtc	ccatanaggt	aaggggtttt	aatccccaaa	540
ancgggggnt	tttatgggaa	atnnctttta	cttcaaaggc	caaanngatn	gtnggtgtca	600
cttcnaantt	ccganannca	anng				624

<210> 415  
 <211> 609  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(609)  
 <223> n = A,T,C or G

<400> 415

acgcgggtta	caacggaagt	aaaatctgtc	gaaatgcacc	atgaagcttt	gagtgaagct	60
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cttcctgggg	acaatgtggg	cttcaatgtc	aagaatgtgt	ctgtcaagga	tgttcgtcgt	120
ggcaacngtt	gctggtgaca	gcaaaaatga	cccaccaatg	gaagcagctg	gcttcactgc	180
tcaggtgatt	atcctgaacc	atccaggcca	aataagcgcc	ggctatgccc	ctgtattgga	240
ttgccacacg	gctcacattg	catgcaagtt	tgctgagctg	aaggaaaaga	ttgatcgccg	300
ntctggtaaa	aagctggaag	aaggccctaa	attcttgaag	tctggtgatg	ctgccattgt	360
tgatatgggt	cctggcaagc	ccatgtgttg	ttgagagctt	tctcagacta	tcacaccttg	420
ggtngctttg	ctggtcgtga	natgagacag	acaggtgccn	gtgggggtggc	atcaanncat	480
gggacaanaa	aggcttnttg	gancttgcaa	aggtncncaa	nttttgncca	naagcntcaa	540
aagntaattg	aatttttccc	ctannncctg	cncnctttt	tannanggnn	ggaaaacggc	600
ttaaanntt						609

&lt;210&gt; 416

&lt;211&gt; 577

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(577)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 416

ggtacgagct	gattgggaac	gggctccaat	ggacatggct	ctgcagtcaa	aatagtttagc	60
agatggacag	gtttggaaaa	tgtgagggcc	catatcatca	tanccagcaa	taaggagacc	120
aacaccatat	ggtctccggc	catatccgtt	gtgttggtat	ctgggtcttg	cttccaatta	180
gagatacaag	actgagacac	aggcagtggt	ctatcgaata	caaactctgga	atncaaacac	240
tcctgacgca	taaaattaca	taacagncta	gcatnancag	taagcccccg	caattgagat	300
accaatatgg	ttgtcaacat	ggagaatttt	tttctgatga	cctgccaaact	cttgatttgc	360
gcccttttca	atgcnaaccc	aaaactggca	tgaagntttt	gnatttcaga	ccancctgnt	420
ggctgnacct	tggcttaaca	ggtttccatt	ggcntatttc	natttggaatn	aantcttgcc	480
cntggggggg	ttcnaancta	ggggccatca	nttgggtcaaa	ctgntttnta	aaccatgggg	540
gcnggctcng	gccttggttg	ctggcntcaa	caaaaan			577

&lt;210&gt; 417

&lt;211&gt; 570

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(570)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 417

ggtactaaga	atattagaga	actggaaatc	cagttttttt	gtggtttttt	aagaaagaga	60
atctgactcc	attgcccagc	ttggagagca	gtggtgcaat	agctggggct	acaggcgtga	120
gccaccacac	caggcctgga	aaccagttt	taatttgtga	actacaaatg	gttggcaact	180
gattccttaa	ttgttattgc	aggagtaggc	ccaacatgag	tccatatgta	gtccttctct	240
ggtctggtgg	gaactgtggg	aaatggtgat	gaccgtgact	tgaaatactn	agaaggtgca	300
tgacaaacaa	attccaagta	ttccatcttc	cttgggaagat	cttcctctgg	ccctatgata	360
taggaagcng	gaatcaaatt	tgggctcttg	ggctaagant	aggggtatgg	aatgagcccc	420
cgtnaantgg	cttgnacttc	ttcttcgcta	atactgggcc	ctggattaaa	accttttgat	480
ttnancnata	gntagggctt	tccttcttgg	ttaatcaatt	cccagaaacc	aacattccca	540



atttgggtaa natactccct tgtanaaaaaa

570

<210> 418  
 <211> 570  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)... (570)  
 <223> n = A,T,C or G

<400> 418  
 ggtacttcta cacatctgcc taacttggga atgaatgtgg gagaaaatcg ctgctgctga 60  
 gatggactcc agaagaagaa actgtttctc caggcgactt tgaaccatt ttttggcagt 120  
 gttcatatta ttaactagt caaaaatgct aaaataattt gggagaaaat attttttaag 180  
 tagtggtata gtttcatgtt tatcttttat tatgttttgt gaagtgtgtg cttttcacta 240  
 attacctata ctatgccaat atttccttat atctatccat aacatttata ctacatttgt 300  
 aagagaatat gcacgtgaaa cttaacactt tataaggtaa aaatgagggt tccaagattt 360  
 aataatctga tncagttctt gntatttccc aatagaatgg gactnngnnc tgttaanggc 420  
 ttaagganaa aggggaagata aggggttaaaa gttgggttaat ggaccaacc ntttnaaaga 480  
 aatgcnmtan anaatatntt natgantaaa naaaggtncc tngcccnggc cggccgtttt 540  
 aaangggcca atttcnagca cncnnggcgg 570

<210> 419  
 <211> 574  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)... (574)  
 <223> n = A,T,C or G

<400> 419  
 ggtacacctt tgactacagc tgcagaagtg ttcctttaga caaagttgtg acccatttta 60  
 ctctggataa gggcagaaac gggtcacatt ccattatttg taaagttacc tgctgttagc 120  
 tttcattatt tttgctacac tcattttatt tgnatttaaa tgttttangc aacctaagaa 180  
 caaatgtaaa agtaaagatg caggaaaaat gaattgcttg gtattcatta cttcatgtat 240  
 atcaagcaca gcagtaaaac aaaaacccat gtatttnact tttttttagg attttttgct 300  
 ttctgtgatt tttctntttt ttgtatactt gcctaacatg catgtgctgt anaantnagt 360  
 taaccaggga aataaccttg ngatnatggc ctanctttta gtttangtct tatgaanttt 420  
 tcattgacca attctaanca ataatggttt annaacaccg tgntntnaaa atttctggta 480  
 anttggaaat aaaaggttn nttgaaatgg gccttttcca cnnactttnt ttncnagctn 540  
 tttcttggn aataagccct nggttcctga aacc 574

<210> 420  
 <211> 573  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(573)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 420

acctccggtg	gaattcgggtg	aatccatctg	gtccctggact	ctttttgggtt	ggtaaactat	60
tgattattgc	cacaatttca	gctcctgtta	ttgggtctatt	cagagattca	acttccttcc	120
ggtttagtct	tgggagagt	tatgtgtcga	ggaatttata	catttccttct	agatttttcta	180
gtttatttgc	gtagaggtgt	ttgtagtatt	ctctgatggg	agtttgtatt	tctgtgggat	240
cgggtggtgat	atcccccttta	tcattttttta	ttgngtctat	ttgattcttc	tctctttttt	300
tatntagtct	tgctagcagt	ctatcaattt	ntgtngatcc	ttttcanaaa	aaccngctc	360
ctggaattca	tttaaatnttt	tnaaggggtt	ttttngtgge	ctctaatttc	cttcaagtcc	420
tggctctgat	ttaagttaat	atnccctggc	ttttggctac	nttttgnaan	gnggttggcn	480
cntgnntttt	ctanntcctn	ttnaantggg	gatngnttnn	aangcccat	ttnggaannt	540
tcccgccttn	ntttgggggg	catttangtt	nnn			573

&lt;210&gt; 421

&lt;211&gt; 582

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(582)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 421

ggtacgcggg	ggtccgccat	ttcgtggacg	ccgggtgagt	gagagagttg	gttggtgttg	60
ggccggagga	aagcgggaag	actcatcgga	gcgtgtggat	ttgagccgcc	gcatttttta	120
accctagatc	tcgaaatgca	tcgtgatttc	tgtccattgg	actgtaagg	ttatgtaggc	180
aatcttgga	acaatggcaa	caagacggaa	ttggaacggg	cttttggcta	ctatggacca	240
ctccgaagt	tgtgggttgn	tagaaaccca	ccnngctttg	cttttgntga	atttgaagat	300
ccccgagatg	canctgatgc	aatccgagag	ctanattngn	angaacacta	tgtggcctgc	360
ccgtgtnagg	aattggaact	ggccgnaatg	gttgaaanaa	agaangttcg	aaaattcgtg	420
gncctncntt	ccttttgng	gtcgtcngnc	cttnagaatg	attaatcgnn	nggaaggang	480
tccttcncc	ttnncccnan	antttncant	aaangaanaa	agcttttttt	ngcaaccn	540
aancaggtcc	cttttttttag	attggganaa	atagnngagn	tc		582

&lt;210&gt; 422

&lt;211&gt; 570

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(570)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 422

ggtactctga	ggcttttagat	tcagtttggg	tctttggggg	ggacctctat	catcacgcct	60
ataatcatcc	cgagagtaat	catctctgga	gtccacgac	cgatcatccc	gtctgtcata	120
tcggtcttca	tagcgggtccc	cgctcctct	gtagtcatca	tccctgcgat	accactgcc	180
aatgctctt	ctgccactgc	ctatccggga	atcatagcct	ctatcatagt	ctctgctgcc	240
tcggtcatca	tagcgatccc	ggccaccata	tcgatccata	tcccggcgtg	ggccatccga	300

tacccatccc	gatacccatc	ccgataccgg	ctgaatcata	acgatctcga	tacttgntc	360
caaagctatc	atcacctctt	ctagggtggg	aagtcacaa	agctgtctgg	tagcaaggac	420
gaagcccttc	aagtctggat	ctggtttggg	cagaatnccc	atttttatca	cnggccaaaa	480
gnaacgaatc	atccctnggc	tttaaccnng	ngcttgatcn	agcaacgtcc	acntcgaaat	540
tntcctngtt	acctananaa	ctcttcattg				570

<210> 423  
 <211> 584  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(584)  
 <223> n = A,T,C or G

acccgggtgg	ttaaacttcg	canaatgcct	agatattatc	ctactgaaga	tttgccctnga	60
aagctgttga	nccacggcaa	aaaacccttc	agtcagcacg	tgagaaaact	gcgagccanc	120
attaccncg	ggaccattct	gatcatcctc	actggacgcc	acaggggcan	gaggggtggt	180
ttnctgaagc	agctggctag	tggcttatta	cttgtgactg	gacctctggg	cctnaatcga	240
gttcctctac	naagaacaca	ccaataaatt	tgtcattgcc	acttcaacca	anantcngat	300
atcagcaatg	taaaaatncc	aaancatctt	actgatgctt	actttaagaa	gangaagctg	360
cngaagccca	anacancnng	gaaggtgaga	tctttcgaca	canaagtatg	agaanttatg	420
agatttacgg	agcaangcan	ggattgatca	nganaagctt	ngggcctcac	caaatttttn	480
nccaanannt	tcaaagttaa	ttttcntnag	tttcnnnggg	cttncttgcn	antctggggg	540
tggctttgnc	ctaattgggaa	tttattnctc	ccaaaaatgg	nggn		584

<210> 424  
 <211> 547  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(547)  
 <223> n = A,T,C or G

actcttggtt	tgtcaatggg	actttccagc	aatccaccca	agagctcttt	atccccaaca	60
tcactgtgaa	taatagtgga	tcctatacgt	gccaagccca	taactcagac	actggcctca	120
ataggaccac	agtcacgacg	atcacagtct	atgcagagcc	acccaaaccc	ttcatcacca	180
gcaacaactc	caaccccgtg	gaggatgagg	atgctgtagc	cttaacctgt	gaacctgaga	240
ttcagaacac	aacctacctg	tgggtgggtaa	ataatcagag	cctcccgggc	agtcaccagg	300
tgcagctgtc	caatgacaac	gggaccctca	ctctactcag	tgtcacaagg	aatgatgtag	360
gaccctatga	gtgtggaatc	cagaacgaat	taagtgttga	ccacagcgac	ccagtcattc	420
tggaatgncc	tctatggnc	aaacgaaccc	caccatttcc	cctnatacac	taattaccgn	480
ccaggggtga	accttaagct	tttctggcat	gcagccttta	cccacctggc	acagtattct	540
tggctgn						547

<210> 425  
 <211> 567  
 <212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(567)

<223> n = A,T,C or G

<400> 425

ggtaccatcc	tttaatatagat	ctcatacacc	agaattcaga	tcataaatga	ctgacagaat	60
atthttgttg	gcagtcctga	tttaaaacta	agactggctt	gtgggttaa	gaatatgttc	120
agthtttgaa	tttaatatag	aactccaatt	cagtaaatgg	tatcactgtt	tacctctttt	180
aaagatatga	ttagacttctg	ttagtaattgt	tcaacttttc	acaaagatgg	tgagtgccat	240
cttaaaactt	actggagatt	ggctttatat	ttagatttat	ataactgggt	atgtgaatat	300
atthaaatac	tggggaaatt	gcttcactgt	cttagaacca	agcaagattc	acctgtgttt	360
tgtgttcatg	ttcatttgcc	tcttaaaggc	aaggggttga	agataaataa	ggtagcaatg	420
tctatagttt	tggccttaac	ctatgccaat	cctaattata	attccctgga	nttnaaaang	480
gttnctttta	ccttatttgg	aanggcnttt	taaatngngg	gttnntgggn	naatatthaa	540
aggattatcc	acctctttca	catnttn				567

<210> 426

<211> 563

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(563)

<223> n = A,T,C or G

<400> 426

ggtacaattt	gttcaaggaa	tttttgtaga	aaaatacgat	cctacgatag	aagattctta	60
tagaaagcaa	gttgaagtag	atgcacaaca	gtgtatgctt	gaaatcttgg	atactgcagg	120
aacggagcaa	tttacagcaa	tgagggattt	atacatgaaa	aatggacaag	gatttgcatt	180
agthttattcc	atcacagcac	agtccacatt	taacgattta	caagacctga	gagaacagat	240
tcttcgagtt	aaagacactg	atgatgttcc	aatgattctt	gttggtata	agtgtgactt	300
ggaagatgaa	agagttgtag	ggaagggaaca	aggtcaaaat	ctagcaagac	aatggaacaa	360
ctgtgcattc	ttagaatctt	ctgnaaaatc	aaaaataaat	ggtaatgaga	atthttttatg	420
acctantgcg	gcaaattacc	ggaaaaactt	ccngngcctg	ggaaggctng	gcaaaaggcc	480
ttcatgggtca	gntgcttaat	tatnctaaat	gccttggaac	ttttgaccag	gntctgaana	540
actgttgncc	aattcaacag	ggg				563

<210> 427

<211> 567

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(567)

<223> n = A,T,C or G

<400> 427

ggtacttttt	tttttttttt	tttttttttt	tttttgttaa	aaaccataca	tcctttttat	60
------------	------------	------------	------------	------------	------------	----

tgntaagtca	taaagaggta	tcaaaattaa	aagcaaaaaat	tacagggtaa	gacttaacaa	120
aactactagg	agcgtcaaag	gaagtgaaaa	tgggactagg	cgcggggcaa	tatgaattaa	180
tgaacatggg	aaggacaagg	atgggganaa	cggtgagcat	gtgctgaana	tactagggga	240
gaggatctgg	tgaaaaattt	gatcttanac	aagcgcctag	gtaaagaaat	aatgggataa	300
gatttctaaa	ccccactatg	gagcttaaga	gtcatcctng	ccattggcgc	tgtctctgnc	360
atcctctcct	tcctcaagnc	tctttttcat	catnctttga	tccaattcca	gctgggcaat	420
tcccccgatc	tttnattatc	atcatcattc	cantanggnn	cccntttctta	ggaanngntn	480
ttttggnccc	cccttaanat	ttcaatttcc	cttnnnccca	ttttttttan	ggagnttggtg	540
gcnnatggccc	ttttnggntt	aaaaatn				567

&lt;210&gt; 428

&lt;211&gt; 578

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(578)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 428

ggtaccctat	gaacctgact	ctgtgggtcat	ggcagaagct	cctcctgggg	tagagacaga	60
tcttattgat	gttggatnca	cagatgatgt	gaagaaagga	ggccctggaa	gaggagggag	120
tgggtggcttc	acagcaccag	ttgggtggacc	tgatggaacg	gtgccaatgc	ccatgcccac	180
gccccatgect	atgccatctg	naaatacngc	ctttctcata	tccactgcca	aagggaccat	240
canattttcaa	tggactgcca	atggggacct	atcaggcctt	tnccaatatt	catccacctt	300
cagataccag	cnactcccc	atcgnatgaa	tctgnanatg	acattaatgc	tgataatgaa	360
tatctctttt	tgcacanatt	gttgggtcctg	gacccccagcc	aanaancctt	tgcaaanctt	420
nctttccaga	cctggaggat	tacttatnga	caccnttgtc	cctaaccaga	agttgnccat	480
ttgngeccng	aacancactt	tccaactgg	canttnngctg	gatcccagnn	ccttcnggat	540
ttggaanaac	nttggctttt	gatggatttt	ttccccgg			578

&lt;210&gt; 429

&lt;211&gt; 572

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(572)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 429

ggtaccaaga	gtttgctcct	ggctgctttg	atgtcagtgc	tgctactcca	cctctgcggc	60
gaatcagaag	cagcaagcaa	ctttgactgc	tgtcttggtg	acacagaccg	tattcttcat	120
cctaaattta	ttgtgggctt	cacacggcag	ctggccaatg	aaggctgtga	catcaatgct	180
atcatctttc	acacaaaaga	aaagtgtgtc	gtgtgcgcaa	atccaaaaca	gacttgggtg	240
aaatatattg	tgctgtcctc	cagtaaaaaa	gtnaagaaca	tgtaaaaact	gtggcttttt	300
ctggaatgga	attggacata	gcccangaac	agaaagaacc	ttgctgggct	ggaggtttca	360
cttgacatc	atggaagggt	ttagtgctta	atctaatttg	ggcctcactg	gacttngncc	420
atttaatgaa	gttnantcat	tattgnnatc	atagtttgct	ttgtttnaan	ccttnncatt	480
taaagttaaa	actggaattt	nanggtaatt	tnaacttgta	nggtttcctg	ggtttagctt	540
tttaaatcnt	aattttttcca	taagcntttt	tg			572

<210> 430  
 <211> 591  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (591)  
 <223> n = A,T,C or G

<400> 430  
 ggtacagccc aggtaatattg ctgagcctaa tgggtgtcag ggtcagtcta agtgaaggca 60  
 aagagagggt gggatgaagg gtgcaaagga atagtaaaga aagcatgttt gagatccana 120  
 acagaataat gggtagtaga gggaggtatt gaggatagaa nagtatatgg gtttggcacc 180  
 acgggggtgga taggcaaaac atttggttga taangcgcag attctgaact aacttgtaag 240  
 gcttgtctgg ttttaggaca ggtaaaatgg nggaatggta aggagaagtt tatagggttt 300  
 atgagcccat gctgtancan gcaagtgata actngctttt aatccctttt cnaaagcaat 360  
 gcctggngnt atgaagnata tttggcattt gatcnggggt tnaanggntg attagngttn 420  
 ctantgaaca atngnaaagg ggntgccatg atcngtnncc caaggatgng attttanggn 480  
 antctcntac ttgtgggggt naaggggtggn gggntttttac naggnggggtc cccnaagggn 540  
 gcctnttggg tntangnaat aaanggccng nnaatngana atccnnnttn n 591

<210> 431  
 <211> 565  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (565)  
 <223> n = A,T,C or G

<400> 431  
 accagtgatg ttttgatata agcatataat gtttaatgat caagtcagga taaatgggggt 60  
 atccatcacc tcaagcacat ataatcattt ctttgtatta ggcataattca aattccactc 120  
 ttttagttat ttttaaatat ccagtaaatt agatcttatt cattctatct agatgtattt 180  
 ttgtacttta tttttctcaa atatttttac ttatgctttt tgtcattatc cacagtgttt 240  
 ttttttaaag cctgagccac tttgtgggtt cagcctcaat ataataatca tccccttact 300  
 cttagactaa ttccttttcc cctgncactt tgccctgtata ctctgtaaaa atgangacct 360  
 tagaaaatca acatttcctg gtgaactttg agagactatt acaagcagtg cccaaaacag 420  
 tangaataag gcaggtaaaa ccagttggga tagccagatn tattattgat ctggtnggac 480  
 aaanggataa nttggngggc atggtttcca nggcantcgn gaattcccca ttagctttaa 540  
 gggtcnatnn angntggccc anggg 565

<210> 432  
 <211> 578  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (578)

<223> n = A,T,C or G

<400> 432

acgcgggggc	caccgtggag	agcagagcgc	ggcggctgga	agctgctaag	tcagagccgc	60
gatgttccgg	attgagggcc	tcgcaccgaa	gctggaccgc	gaggagatga	aacggaagat	120
gcgcgaggat	atgatctcct	ccatacggaa	ctttctcatc	tacgtggccc	tcctgcgagt	180
cactccattt	atcttaaaga	aattggacag	catatgaaga	caggacatca	catatgaatg	240
caccgatatg	aagagcctgg	ttacagtttc	gactcctctc	tgnaagtga	taggcccaga	300
aaggtgtaag	agactctttg	aatggacata	aaattctgct	tgttnagaac	caagttttgg	360
ntctgggtna	ctgacctttc	aaaagctaaa	attttaaaac	tattttgggg	aagtttttta	420
tttnnttatt	nntcngtttn	ttnataaaaa	agtaccttgg	tnccggnacc	accnttaag	480
ggccnaattn	cagnnntnt	ngngggccgn	ttacttttng	ggatnntaa	nttcggganc	540
cnaanccttg	ggggttaantc	angggtcata	nnctggtt			578

<210> 433

<211> 563

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(563)

<223> n = A,T,C or G

<400> 433

acttcttctg	gccaaaggct	gttccacatt	cactacattt	aaaaggcttc	tctccaatat	60
ggattttctc	atgctcagta	aggttggatt	tgccactgaa	ggtttttcca	cactccttac	120
atacaaagg	cttctctcct	gtgtgagttc	tctggtgtct	gatgaggttt	gacttctgaa	180
tgaaagcttt	cccgcaatct	ttacactcaa	aaggtttttc	tccagtgtga	attttctggt	240
gcgtaaggag	gttttctctc	tggctaaaatg	attttccaca	ttcattacat	tcgaaaagct	300
tctcgccagt	atgggtgttc	tgatgtttta	tgacatactg	cttttggtta	aaggcttttc	360
cacactcggt	acattcaaaa	gggttctctc	tccgtgtgaa	aatgctcatg	ctcantgang	420
tttgaattgn	nggcttgaag	actttttcca	tacccttaca	ggcaaanggg	gttttcccn	480
ttggaanatn	tntggctgcn	tnaagntggt	gacatctgga	tnggaaacct	tttcncatt	540
tccaaagggn	tttttttcnn	nag				563

<210> 434

<211> 563

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(563)

<223> n = A,T,C or G

<400> 434

ggtacagctg	tctgcattga	aaattcatgc	atggagaaaag	ggagtaagca	agggagaaac	60
ggtgcgattc	acatattccg	cgagatcatc	aagccagcag	agaaatccct	ccatgaaaag	120
ttaaaacaag	ataagcgctt	tagcaccttc	ctcagcctac	ttgaagctgc	agacttgaaa	180
gagctcctga	cacaacctgg	agactggaca	ttatttgtgc	caaccaatga	tgcttttaag	240
ggaatgacta	gtgaagaaaa	agaaattctg	atcgggacaa	aaatgctctt	caaaacatca	300
ttctttatca	cctgacacca	ggagttttca	ttggaaaagg	atttgaacct	ggtgttacta	360

acatttttaaa	gaccacacaa	ggaaacaaaa	tcttttcttg	aaagaaagta	aatngatcca	420
cttctggtga	atgaatttga	aattcaaagg	aatctggcct	tcatgccanc	aaatgggggt	480
aattcatgnt	ggagaataac	ctcctttatc	cagccgnaca	cacctgttgg	aaatggatcc	540
aactgctgga	aattncttaa	taa				563

<210> 435  
 <211> 558  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (558)  
 <223> n = A,T,C or G

<400> 435						
ggtacgcggg	ggaagatggc	ggccgtgcag	gcggccgagg	tgaaagtgga	tggcagcgag	60
ccgaaactga	gcaagaatga	gctgaagaga	cgctgaaaag	ctgagaagaa	agtagcagag	120
aaggaggcca	aacagaaaga	gctcagttag	aaacagctaa	gccaagccac	tgctgctgcc	180
accaaccaca	ccactgataa	tggtgtgggt	cctgaggaag	agagcgtgga	cccaaataca	240
tactacaaaa	tccgcagtca	agcaattcat	cagctgaagg	tcaatgggga	agaccatac	300
ccacacaagt	tccatgtaga	catctcactc	actgacttca	tccaaaaata	taagtacact	360
gcagcctggg	gatcacctga	ctgacatcac	cttaaagggtg	gcaggtagga	tccttccaaa	420
agancttntg	ggggaaactn	antcttctnt	tgaactttca	aggaaanggg	tgaagtttgc	480
agtcattggg	caattccaga	aattttaaat	cagnagaaga	atttttccta	ttaataccaa	540
ctgggtcggg	ggagactn					558

<210> 436  
 <211> 528  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (528)  
 <223> n = A,T,C or G

<400> 436						
ggtacaaaaa	aaaccttaca	taaattaaga	atgaatacat	ttacaggcgt	aaatgcaaac	60
cgcttccaac	tcaaagcaag	taacagccca	cgatgttctg	gccaaagaca	tcagctaaga	120
aaggaaactg	ggtcctacgg	cttggacttt	ccaaccctga	cagaccgca	agacaaaaca	180
actggttctt	gccagcctct	agagaaatcc	cagaacactc	agccctgaca	cgttaatacc	240
aaggggaaca	gttaactcca	atacaaggct	aaaatcagca	acaagttcta	caatccagtg	300
ctgatatcag	atacaaagct	tcaagggcaa	tttcttttctg	aaggcttatt	ccagtttctg	360
gaggctagca	tgaagtgtgt	gcatttgcca	ggggcaaatt	tctattctca	attaacccat	420
gcagcaaant	gctacgcac	tggctgagtc	cggtttanaa	nccatttgcc	ggnggaccaa	480
tggaaggggc	ccgaattcgt	cnnaacttgn	cccgggcggg	ccgttcaa		528

<210> 437  
 <211> 576  
 <212> DNA  
 <213> Homo sapiens



<220>  
 <221> misc\_feature  
 <222> (1) ... (576)  
 <223> n = A,T,C or G

<400> 437

actttttttt	ttttttttt	ttttttttt	aggtttgagg	gggaatgctg	ganattgtaa	60
tgggtatgga	gacatgtcat	ataagtaatg	ctaggggtgag	tggtaggaag	ttttttcata	120
ggaggtgtat	gggttggtcg	tagcggaatc	gggggtatgc	tggttcgaatt	cataagaaca	180
gggaggttag	aantaggggc	ttggtgacaa	aatatgttgt	gtagagttca	gggganagtg	240
cgtcatangt	tgttcctagg	aanattgtac	nggtgagggt	tgtttattat	aataatgtn	300
gggtatccgg	ctntgaaana	atngggccaa	ngggcctgcg	gtgtattcga	ngttnaaacc	360
tgagactagt	tcggactccc	ntttgcaagg	ncccaaaggg	ggttnggttt	ggcccttgct	420
annggtgnga	naataaatcn	tntttattgg	cccaaggggt	cttaacngcn	aggagttaat	480
ccaaaggggt	ncntnggntt	ttnnnanaaa	nggttgnaa	aagggttaaag	ggacccncct	540
ttntnnntaa	tgntcgnaat	gtcaaatnga	tngcnn			576

<210> 438  
 <211> 576  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (576)  
 <223> n = A,T,C or G

<400> 438

ggtaccccaa	ttaccagtat	ggtggaccct	accccttctt	ctctgcattg	ggaaacagaa	60
cagagaacag	aaaaaatcat	tccatcttgc	tcttaactct	ttccacctat	gtgctcagtt	120
tttcaagtag	aatttctatt	cctttgctgg	tgtttttggg	tttttccaat	gtaggaatca	180
agcttttcag	tgcagctttg	actttgtttg	caacttccag	gtcacaactc	tggaggaggc	240
tagaaagaat	aatggcacct	cgattttacac	tagcccagga	cttcaggttc	ttcataccaa	300
catgctctac	aagtgttttt	gcaaaacaac	cttctcttcc	attntctttt	catcttttta	360
tcttgctcta	ttaaccactt	nagaaactaa	gaatgtccct	gcaaggatgt	tctggcaatg	420
ntgaaagctt	ctccgtcctt	ggccaccagg	atgcaagtcc	ntggttnttg	ccagcttggc	480
cnatnggcat	tccatnggna	nggcttgaac	cgttttccag	ggggcagant	cccaaaatgg	540
ccngacacca	accnacang	cagacttntt	ttagcn			576

<210> 439  
 <211> 578  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (578)  
 <223> n = A,T,C or G

<400> 439

cgaggtacgc	gggggagaaa	aaacctgcgg	aaaatggtag	cgatggcggc	tgggccgagt	60
gggtgtcttg	tgccggcggt	tgggctacgg	ttgttggttg	cgactgtgct	tcaagcggtg	120
tctgcttttg	gggcagagtt	ttcatcggag	gcattgcagag	agttaggctt	ttctagcaac	180

ttgcttttgca	gctcttgtga	tcttctcgga	cagttcaacc	tgcttcagct	ggatcctgat	240
tgcagaggat	gctgtcagga	ggaagcacaa	tttgaaacca	aaaagctgta	tgcaggagct	300
attcttgaag	tttngggatg	aaaattggga	aggttccctn	aagtccaanc	ttttgttang	360
agtataaaa	cccaaactgt	tcagaaggac	tgccaaatna	aagtatgtnn	cgtgggttca	420
aacntgaat	taaaaggctt	ttngaccaac	atngggnaca	attgcttgan	nacttgtcca	480
tttcttaaaa	ttgggaacnc	tggaaccngt	nanaaanatt	tcngattgga	aaantttgga	540
ccncatttta	aatcttgctt	aaattttggc	caatcctt			578

&lt;210&gt; 440

&lt;211&gt; 573

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (573)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 440

ggtacttttt	tttttttttg	agacagggtc	ttgccctgtc	acccaggctc	gagtgcactg	60
gagtgatcac	agctcactgg	cctcaagtga	tcctcctgcc	ttggcccctt	aagtgccagg	120
gttacaggca	tgagctacca	tgccctggcag	aaattcaaga	tttgataaaa	cttacttctt	180
tgccaagcct	gttcttcaag	ttattcagaa	ctgggtgtat	accttgtcct	catatgtatc	240
ttgtccctgc	tgtcttttag	gttagcaagg	tgtatgaata	cttttaagtt	ttgtttgttc	300
ttttcctcgt	ggtatcaagt	gaaatactga	tctattctct	ggctagggtc	aatttacaaa	360
attgccatgg	aactgagcca	aaaggcccca	cgtgggataa	aaattnctta	ccatcgacgc	420
ccanccgtan	tttttcaagg	tattggcttt	tgggaagntt	accaaatttc	nggtaaacca	480
aaattcnaaa	agnaaaaaat	tnccctggng	taaccttgcc	cgggcggccg	ttcaaaaggg	540
cnaatttcca	ncacattggg	cggccgttaa	tna			573

&lt;210&gt; 441

&lt;211&gt; 572

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (572)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 441

ggtacaaaat	tttattaaag	gtcttttagag	agcaacatcc	agactccaga	atacagctgc	60
caaggagacc	ctgttatgct	gtggggactg	gctggggcat	ggcaggcggc	tctggcttcc	120
cacccttctg	ttctgagatg	ggggtggtgg	gcagtatctc	atctttgggt	tccacaatgc	180
tcacgtggtc	aggcaggggc	ttcttagggc	caatcttacc	agttgggtcc	cagggcagca	240
tgatcttcac	cttgatgcc	agcacaccct	gtctgagcaa	cacgtggcgc	acagcagtgt	300
caacgtagta	gttaacaggg	gtctccgctt	gtggatcatc	aagccatcca	caaacttcat	360
ggatttagcc	ctctgncctt	cggaggttcc	cagacaccca	caanctngca	agcctttggc	420
cccacttttc	catgatgaaa	ctgnagncac	aaccatange	aagggccctt	cggacannta	480
aggccttcct	aaggagnttg	naacncnana	naacttttgc	ttgggcantg	ggcacaccag	540
nacntntaag	nggccccctt	tttaagcata	aa			572

&lt;210&gt; 442

<211> 562  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(562)  
 <223> n = A,T,C or G

<400> 442  
 acaggtcaga gtcttctttt ctttctttt tgagatggag tcttgctctg ttgccagact 60  
 ggagtgcagt ggtgcatct gggctcactg caatctccac ctcccgggtt caagcgattc 120  
 tcctgcctca gcctcccagag taactgggac tacaggtgcg cgccaccaag cccagctcat 180  
 ttttgtattt ttagtagaga tggggtttca cgatgttggc taggatggtc tcgatctctg 240  
 gtcagagtct tttctgtaaa tatccttggg aaagaagcaa ttttagactg tagctgttgc 300  
 aaatgcttta aggaagaagc aaaacaactg tcaagtcttc ctgaaatgaa gaaactncac 360  
 cagggctgct atatacagaac aaccncaacc aagcacttca aacatgatgc cgacaggtgg 420  
 ccccagctta aaaaaccagg aanaagttcn gantccnnaa actgngaagc cctcttggac 480  
 ttttgggaatt aattggggggc cagtagccaa gttatnagac caaatcangg cntagggccc 540  
 cgtattattt ggcggggatt tg 562

<210> 443  
 <211> 585  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(585)  
 <223> n = A,T,C or G

<400> 443  
 actttttattt tttggtggtg aaattgactg atgattttcc ttttcttcg ctggactatt 60  
 gtgccaaactg ccaggctgcc tcctgccctt acagccctaa gtggctgcct tctttccatc 120  
 aactcccaac ttcttctctg gaagttaaat tgtctcaacg cctccccctc ccccatcccc 180  
 tccatttttc tcccaagaaa cctgactcaa ttatttgcac attttgagaa actgctgcag 240  
 attagtctctt tttgccagtt ttccctggaa ctccctggcct tttgtggagg ggagggatgg 300  
 agagaatagg aatcttcact agaagccgtg ggaagaattg gaagttacat gctgtatatg 360  
 caatgtccag cagtctgata aactgacgat tcttaataca gattttttcc tgatggggaa 420  
 gggactttta ttttctttta nagaggggaa agtgtgagct cttcccttat tcctaattggc 480  
 tatttttgaa gcaanaaagg ccacaacatt ngcacatgcc acctgcnaag gaccttgagt 540  
 nagtgaagnc tcctaaaact ggggttaanaa ccttggtttc tctnn 585

<210> 444  
 <211> 437  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(437)  
 <223> n = A,T,C or G

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<400> 444
acgcggggac gtgactcagc acttttcccca gagcccggac tgcgggagaac aatatacctcc      60
tccctaacag ataaacagcc cttgttcctc gggataagga ctggcagtc cctgacaccc      120
taagaccggc atctgtcgat gttatttccc cagcatggcc gaaacagaag ccctgtcgaa      180
gcttcgggaa gacttcagga tgcagaataa atccgtcttt attttgggcg ccagcggaga      240
aaccggcaga gtgctcttaa aggaaatcct ggagcagggc ctgttttcca aagtcacgct      300
cattggccgg aggaagctca ccttcgacga ggaagcttat aaaaatgtga atcaagaagt      360
ggtggacttt gaaaagttgg atgactacgc ctctgccttt caaggtcatg atgttggatt      420
ctgtgcctgg gtacctn

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```

<210> 445
<211> 592
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1) ... (592)
<223> n = A,T,C or G

```

```

<400> 445
actttttttt tttttttttt tttttttttt taaggtttga gggggaatgc tggagattgt      60
aatgggtatg gagacatata atataagtaa tgctaggggtg agtggtagga agttttttca      120
taggaggtgt atganttggc cgtagcggaa tcgggggtat gctgttcgaa ttcataagaa      180
cagggagggt aaaagtaggg tcttggtgac aaaatatgtt gtgtanagtt caggggaaag      240
tgcgtcatat gttgttccta ggaanattgt antgggtgagg gtgttaatta taataatgtt      300
tgtgtattcg gctatnaana atagggccaa atgggcctgc ngcctattcn atgtttaanc      360
tgagacttnt tcggactccc cttcggcaan gtчнаantgg ggttcggttg ngcncctgcag      420
tgnggagata nntcntntta ntggccaatg gtnnnngatgg ccagaataat cannanggnt      480
tcnttnntcn tnaaaaggtc naaatggtn angganaccn cttattagga attgttaatc      540
ttnaatgatn gttntggnga cnctatatgg anaatgtnag gnctactccn ng      592

```

```

<210> 446
<211> 599
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1) ... (599)
<223> n = A,T,C or G

```

```

<400> 446
ggtacggcaa acacaacgga cctgagcact ggcataagga cttccccatt gccaaaggag      60
agcgccagtc ccctgttgac atcgacactc atacagccaa gtatgaccct tccctgaagc      120
ccctgtctgt ttcctatgat caagcaactt ccctgaggat cctcaacaat ggctatgctt      180
tcaacgtgga gtttgatgac tctcaggaca aagcagtgtc caaggaggga ccctggatg      240
gcacttacag attgattcag tttcactttc actgggggttc acttgatgga caaggttcat      300
agcatactgt ggataaaaag aaatatgctg cagaacttca cttggttcac tggaaacacca      360
aatatgggga ttttgggaaa gctgtgcagc aacctgatgg actggccgtt ctaggtatct      420
tttttgaagg ttggcagcgc taaaccnggc cttnataaag ttgttgaatg tgctggattc      480
cattaaaaca aagggcaaga attgtgact ttcactaatt nnaatcctcg tnggccttct      540
tcctgaaatc cttggattac cggacctncc cagcttactn accanccttc tcttttngg      599

```

<210> 447  
 <211> 588  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(588)  
 <223> n = A,T,C or G

<400> 447  
 ggtacgcggg atgagtgtgg aatccagaac aaattaagtg ttgaccacag cgacccagtc 60  
 atcctgaatg tctctatagg cccagacgac cccaccattt cccctcata cacctattac 120  
 cgtccagggg tgaacctcag cctctcctgc catgcagcct ctaacccacc tgcacagtat 180  
 tcttggctga ttgatgggaa catccagcaa cacacacaag agctctttat ctccaacatc 240  
 actgagaaga acagcgggact ctatacctgc caggccaata actcagccag tggccacagc 300  
 aggactacag tcaagacaat cacagtctct gcggagctgc caagccctcc atctccagca 360  
 acaactccaa acccgtggag gacaaggatg ctgtggcctt ccctgtgaac ctgaggctca 420  
 gaacacaacc tacctgtggg gggtaaatgg tcagagcctc cagcagtcct aaggctggag 480  
 ctgtccaatg gcaacangga cctnactcta ttcaatgtca caagaaatga cncaagaacc 540  
 tatgnatgtg gaatccagaa ctnagtgtat caaacccaat gaccagnn 588

<210> 448  
 <211> 593  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(593)  
 <223> n = A,T,C or G

<400> 448  
 accatttgtc tgacctctgt aaaaaatgtg atcctacaga agtggagctg gataatcaga 60  
 tagttactgc taccagagc aatatctgtg atgaagacag tgctacagag acctgctaca 120  
 cttatgacag aaacaagtgc tacacagctg tggcccact cgtatatggg ggtgagacca 180  
 aaatggtgga aacagcctta accccagatg cctgctatcc tgactaattt aagtcattgc 240  
 tgactgcata gctcttttct ttgagaggct ctccattttg attcanaaag ttagcatatt 300  
 tattaccaat gaatttgaaa ccagggtctt tttttttttt ttgggtgatg taaaacncaa 360  
 ctncctgnca ncaaaataat taaaatagnc acattgntat cttttattag gtaattcact 420  
 tcttaattan atggntcaat actctaagna tcaaaatntt ccaattatna tggctcacct 480  
 gaaagaagna tgctctttta aggaatacag cttcttcnat tnacaattta acanggggag 540  
 aaaattaaan tnaangantt ganatctgga ggngtannaa ngntctcgn ttc 593

<210> 449  
 <211> 577  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(577)

<223> n = A,T,C or G

<400> 449

actgtgggtc	gaagtaatgg	atacggacgt	aaccatcttc	gccgccgctg	ctgtagctct	60
tgccatcagg	atggaaggca	acactgttga	taggtccaaa	gtgacccttg	actcttccaa	120
actcttcttc	aaaggccaaa	tggaagaacc	tggcctcaaa	cttgccaatc	ctggtggagg	180
ttgtgggttac	atccatggct	tcctgaccac	cgcccaggac	cacatgggtca	tagttggggg	240
agagggcagc	tgagttgaca	ggacgttctg	tccggaaaagt	cttctgatgt	tcaagagttg	300
tggagtcaaa	aagcttggct	gtgttgctct	tggacncggc	acaaacatgg	tcatgtccct	360
ggataactgg	atgtcgttga	tctgccggga	gtgctcctta	acattcacca	acacctcttc	420
anacttggca	ctatactggg	tgactctcca	ctcttatggc	cnggatgatg	cactcccca	480
aggggtncca	aacagnactg	gtgatttaga	atcattgcan	ggatcttatg	tagggctcat	540
tgntgcaatc	tggcttggat	ccgcagtcaa	aaaagnt			577

<210> 450

<211> 575

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(575)

<223> n = A,T,C or G

<400> 450

ggtacttggtg	atcacactac	gggaatctct	gtgggtatata	cctggggcca	ttctaggctc	60
tttcaagtga	cttttgga	tcaacctttt	ttatttgggg	gggaggatgg	ggaaaagagc	120
tgagagttaa	tgctgaaatg	gatttataga	atatttgtaa	atctattttt	agtgtttgtt	180
cgttttttta	actgttcatt	cctttgtgca	gagtgtatat	ctctgcctgg	gcaagagtgt	240
ggaggtgccg	aggtgtcttc	attctctcgc	acatttccac	agcacctgct	aagtttgtat	300
ttaatggttt	ttgtttttgt	ttttgtttgt	ttcttgaaaa	tgagagaaga	gccggagaga	360
tgatttttat	taattnttnt	tttttttttt	tactatttat	agctttaaaa	agggcctncc	420
ttccccctct	ctttctttgg	netctttcat	taaccccttc	ccagtttttt	ttaacttaaa	480
ccccgttctc	atggcctnng	ccttttgaag	cgnttctctc	tataaaaagc	tttgccgaac	540
aanttttttt	taccgatccc	aaatttatga	agggg			575

<210> 451

<211> 573

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(573)

<223> n = A,T,C or G

<400> 451

actaggctaa	ctagaaggat	ctcatcccca	tatgtgggtct	catttcaagt	ctatggatga	60
ctaccttcat	tgctgtgtgc	gagatgggtt	cacccttgga	aaatatgggtc	acttcagcat	120
aaaatatgta	aatctttata	atgatcaatt	catcctacct	ccttttacat	gcagctgaaa	180
aatgacaggc	tagggacata	gaatattgtg	aactttatac	tgttagaatc	actgtccatt	240
aatgatcac	tagctaattg	tcactaaatt	tacaaattaa	ggaaattata	tatagaatac	300
tgcaaaaaca	cagtaaaaag	actgaagttc	gcccatttct	gctcaggaag	tctcttcact	360

cctaagcttc	atatgttgcc	ttctggcttc	aaaattctgc	tattattact	gttttctctc	420
tttgatcttc	ctttggtecc	cagtgccaga	cttccaagcc	ttttngttaa	aaagccatct	480
tttgatgcc	atttcnaaca	gcttcagtga	tgccctctgaa	aaaaggatct	gccggctaan	540
atttctcngg	ttcgtgcttc	ctaccgganc	tcc			573

<210> 452  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 452						
acaattttat	ccctaaaaac	ctgttgacat	caaaatatga	cagttgctat	atccataaaa	60
tatttacata	gcacggcata	ttaagcttta	gacacttggc	aattaaacca	cataaaaaga	120
ggacaagacc	cccatectac	atgtttggaa	tcaggtgttc	accggtccct	atctggcgac	180
tgtacgcggg	tgggttcctt	acttgatttc	tgttatcagc	tgattttgaa	acataataa	240
atgattttct	tgttcccttc	tttaactagc	tgcccttaga	ttttgataat	cacagtctta	300
aaatactagg	aaagaagtgg	atgggaattg	taggcataga	tttcatatca	agggcatttc	360
aagacagaat	ttttaattcc	tgtagtaggc	ttgctggagc	naaaggaaaa	tgtgctgggt	420
aaaaatcaac	ttatgccatt	ttaaaatttg	ataaaatttg	gagtggcatn	ctgctaaggg	480
gagaccttgg	gccggacccc	cttangggca	aattccngca	cactgggggg	cggtactang	540
gggatccgac	ntcggncan	acttggcgna	tcatgggctt	antgttcctt	gnngn	595

<210> 453  
 <211> 380  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(380)  
 <223> n = A,T,C or G

<400> 453						
ggtacgcggg	gagccgcctg	gataccgcag	ctaggaataa	tggaatagga	ccgcggttct	60
atthttgttg	ttttcggaac	tgaggccatg	attaagaggg	acggccgggg	gcatttcgtat	120
tgcccgcta	gaggtgaaat	tcttggaccg	gcgcaagacg	gaccagagcg	aaagcatttg	180
ccaagaatgt	tttcattaat	caagaacgaa	agtcggaggt	tcgaagacga	tcagataccg	240
tcgtagtcc	gaccataaac	gatgccgacc	ggcgatgcgg	cggcgttatt	cccatgaccc	300
gccgggcagc	ttccgggaaa	ccaaagtctt	tgggttcctg	ggggagtatg	gttgcaaaaa	360
aaaaaannaa	aaaaaaaaag					380

<210> 454  
 <211> 589  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

<222> (1)...(589)

<223> n = A,T,C or G

<400> 454

ggtactcttg	gtttatcaat	gggacgttcc	agcaatccac	acaagagctc	tttatcccca	60
acatcactgt	gaataatagc	ggatcctata	tgtgccaaagc	ccataactca	gccactggcc	120
tcaataggac	cacagtcacg	atgatacacg	tctctggaag	tgctcctgtc	ctctcagctg	180
tggccaccgt	cggcatcacg	attggagtg	tggccagggt	ggctctgata	tagcagccct	240
ggtgtatttt	cgatatttca	ggaagactgg	cagattggac	cagaccctga	attcttctag	300
ctcctccaat	cccattttat	cccatggaac	cactaaaaac	aaggtctgct	ctgctcctga	360
agccctatat	gctggagatg	gacaactcaa	tgaaaaattta	aagggaatac	cctcaggcct	420
gangtgtgtg	ccactcagag	acttcaccta	actagagaca	gtcaaaactgc	aaccatgggt	480
gagaaattga	cgacttcaca	ctatggacag	cttttnccaa	gatgtcaaac	aagactcctc	540
atcatgataa	ggntcttacc	cctttaattg	nccttggtat	gcctgccct		589

<210> 455

<211> 589

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(589)

<223> n = A,T,C or G

<400> 455

ggtacgcgga	agagacaggg	tttcaccatg	ttgcccaggc	tggtttcgaa	ctcctgacct	60
caggtgatcc	accgcctcg	gcctcccaaa	gtgctgggat	tacaggcttg	agcccccgcg	120
cccagccatc	aaaatgcttt	ttatttctgc	atatgttgaa	tactttttac	aattcaaaaa	180
aatgatctgt	tttgaaggca	aaattgcaaa	tcttgaaatt	aagaaggcaa	aaatgtaaa	240
gagtcaaaaac	tataaatcaa	gtatttggga	agtgaagact	ggaagcta	ttgcattaaa	300
ttcacaact	tttatactct	ttctgtatat	acattttttt	tctttaaaaa	acaactatgg	360
atcagaatag	ccacatttag	aacacttttt	gttatcaagt	caatatTTTT	agatagtttag	420
aacctgggtct	taagcctaaa	agtgggcttg	attctgcagt	aaatcnttta	caactgcctc	480
gacacacatt	aaccttttta	aaaatngacc	ttcccgaagt	cttttggtag	catggnacac	540
ctgatgctta	natgttcang	taattaatat	ggnccagnag	tnttgnnc		589

<210> 456

<211> 582

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(582)

<223> n = A,T,C or G

<400> 456

acagaatggt	gatacaaagc	ttaaaattct	tgcataatggt	catagaaaat	gcactcttgg	60
ttttgtgttt	ttatcacttg	cttccaactt	aggcttttgg	ctcagaagat	tattgaataa	120
tgatttgtct	tagtttctgt	ttcagtaagg	gaattctgag	gccgttgcta	tgataccatc	180
attaagacat	tcacatgtct	tcatataata	tctcttcatt	tcaaataccta	atcactatct	240
catactatta	cagggctttg	atgctgccag	cactgtcttt	tacataggaa	attctagatt	300



tgcacagtaa	tagaggaatt	agaagtacct	aactatacac	tttgattcag	cctgctaaat	360
caggggttca	atactagctt	ggacaaactt	tgtaagtaat	taattgctac	cagccttatt	420
ggaaacaaat	tatcaactag	tttccccctgc	caaattttga	aattcactgn	ttcacttaat	480
ctatttatatt	actaataatg	gattaataaaa	gatgaattaa	ttattattac	ttactagtnt	540
aaatgaaaaa	cagggactga	aatagttctgn	atccgngttg	ca		582

<210> 457  
 <211> 380  
 <212> DNA  
 <213> Homo sapiens

<400> 457						
ggtacttttt	tttttttttt	tttttggagt	tttttagttta	ttaatgttct	tgcgaaaaat	60
ccacagtggc	cacagctaac	atcattgcag	cacctttact	ccttcggctg	tgatccaatc	120
tccagctcac	ttctttttgc	cagcaccaac	attggccttt	gcagtcccc	tgactttctt	180
cattctgttc	ttgcgttcct	ttcgttgctt	tcttgaggtc	tttttcttct	catacaggcc	240
atgtcttgca	agtctatgtt	tgggttcatt	tttctttgca	taatccagg	aatcataaat	300
catgccaaag	ccagtgtgtc	tgccaccacc	aaaatgagtt	ctgaatccaa	atacaaagat	360
gacatccggt	gtggtcttgt					380

<210> 458  
 <211> 382  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(382)  
 <223> n = A,T,C or G

<400> 458						
acgcggggag	aacagccacc	cctctctcgg	gcactgctgc	catgaatgcc	ttcctgctct	60
ccgcactgtg	cctccttggg	gcctgggccc	ccttggcagg	aggggtcacc	gtgcaggatg	120
gaaattttct	cttttctctg	gagtcagtga	agaagctcaa	agacctccag	gagccccagg	180
agcccgagg	tgggaaactc	aggaactttg	cacccatccc	tgggtgaacct	gtggttccca	240
tcctctgtag	caaccgaac	ttccagaag	aactcaagcc	tctctgcaag	gagcccaatg	300
cccaggagat	acttcagagg	ctggaggaaa	tcgctgagga	cccgggcaca	tgtgaaatct	360
gtgcctacgc	tgccctgtacc	tn				382

<210> 459  
 <211> 592  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(592)  
 <223> n = A,T,C or G

<400> 459						
ggtactgagg	aaatattttg	taaagtgagc	tttgggtata	acttagcccc	atcattatct	60
agagaataga	ggaggaagaa	agaggaagga	ttttaaggcc	agacaatgac	agaccattca	120
ggataggtag	ggtttttaag	ggagataaac	acagttctcat	caactaagga	gagatttgct	180

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gcagtaaata ggatgagggga aatagtctgt gggatgcaag caaaggaagc aggggtgcctt 240
agacactgag tggagccaga aagatcatgc ggcctttttc caagtacatg gccaccaagt 300
aagaatgggt ggtgacaaga cagaaggcta aaacaggaag gtaatcttgt gcacctgaca 360
aatngaaaga attaaggatc aaaattgaag caggctntaa gagtttcaag aaattcttaa 420
aaccctaaaag tgatttgga gccccaaact ttccggtaat gctncccatg gcattgatggg 480
ccaaaacctt ggggggttctt aagttnnaaa agccctntnc caaattttta tggacccctt 540
acattttttc taatcaatcc cccctttcca aaaaaatngg acctcntttt tt 592

```

<210> 460

<211> 578

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(578)

<223> n = A,T,C or G

<400> 460

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acgcggggcac tatectgaat tatgtgcctg tctagataag cagagaccat gccaaagcta 60
taatggaaaa caagttttaca aagagacctg tattttctttc ataaaagact tcttggcaaa 120
aaatttgatt atagttattg gaatagcatt tggactggca gttattgaga tactgggttt 180
ggtgttttct atggtcctgt attgccagat cgggaacaaa tgaatctgtg gatgcatcaa 240
gctatcgta gtcaaaccctt tttaaaatgt tgctttggct ttgtaaattt aaatatgtaa 300
gtgctatata agtcaggagc agctgtcttt ttaaaatgtc tcggctagct agaccacaga 360
tatcttctag acataattgaa cacattttaag atttgagggg tataaggggaa aatgatatga 420
atgtgtattt ttactcaaaa taaaagtaac tgttacgttg cgaaaaaaan nnnnnnnnnn 480
naaaaaaaaag tnccttgggc cgggaccacg ctaggggcaaa tccagcacac tggcgggcctg 540
actagggatc cactnggacc agctggcgna atatggnn 578

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<210> 461

<211> 425

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(425)

<223> n = A,T,C or G

<400> 461

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acgcgggggct ttctgggtctc ggccgcagaa gcgagatgac gaaggggaacg tcatcgtttg 60
gaaagcgctcg caataagacg cacacgttgt gccgcgctg tggctctaag gcctaccacc 120
ttcagaagtc gacctgtggc aaatgtggct accctgccaa gcgcaagaga aagtataact 180
ggagtgccaa ggctaaaaga cgaaatacca ccggaactgg tcgaatgagg cacctaaaaa 240
ttgtataccg cagattcagg catggattcc gtgaaggaac aacacctaaa cccaagaggg 300
cagctgttgc agcatccagt tcatcttaag aatgtcaacg attagtcag caataaatgt 360
tctggtttta aaaaatnnan nnnaannntn nttnaaanaa aaaaagtnct nggccgngac 420
cacgc 425

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<210> 462

<211> 581

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(581)

<223> n = A,T,C or G

<400> 462

ggtactattg	acccagcgat	gggggcttcg	acatgggctt	tagggagtc	taagtggagt	60
ccgtaaagag	gtatctttac	tataaaagct	attgtgtaag	ctagtcatat	taagttgttg	120
gctcaggagt	ttgatagttc	ttgggcagtg	agagttagta	gtagaatgtt	tagtgagcct	180
aggggtgttg	gagtgtaaat	tagtgcgatg	agtaggggaa	gggagcctac	taggggtgtg	240
aataggaagt	atgtgcctgc	gttcaggcgt	tctggctggg	tgccctcatc	ggatgatgata	300
gccaaggtgg	ggataagtgt	ggtttcgaag	aagatataaa	atatgattag	ttctgtggct	360
gtgaatgtta	taattaagga	gatttgtaag	ggagatttag	atanagaggt	anagtttttt	420
tcgtgatagt	ggntcactgg	ataantggcc	gttggctttg	ccatgattgt	gaggggtagg	480
agtcaagtag	ttagtattan	ganggggggt	nttaggggtc	cnaggaaang	ttggggaana	540
ctaaannggt	gtngtnattn	gtaaaaaata	nnnnanggat	n		581

<210> 463

<211> 574

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(574)

<223> n = A,T,C or G

<400> 463

actgtgtggc	gccttattct	aggcacttgt	tgggcagaat	gtcacacctg	ccgatgaaac	60
tcctgcgtaa	gaagatcgag	aagcggaacc	tcaaattgag	gcagcggaac	ctaaagtttc	120
agggggcctc	aaatctgacc	ctatcggaac	ctcaaatgag	agatgtatct	gaagaaacaa	180
tgggaagtag	aaaggttaaa	aaatcaaaac	aaaagcccat	gaatgtgggc	ttatcagaaa	240
ctcaaaatgg	aggcatgtct	caagaagcag	tgggaaatat	aaaagttaca	aagtcctccc	300
agaaatccac	tgtattaagc	aatggagaag	cagcaatgca	gtcttccaat	tcagaaccaa	360
aaaaaaaaaa	naaaaaaaag	tacttttttt	ttttnnnnnt	tttttttttt	taggtaatgg	420
gtgttgagct	tgaacgcttt	cttaattggn	ggctgctttt	angcctctat	gggtgttaaa	480
ttttttactc	tcttacaagg	tttttcctaa	gtccaaanac	tgtccttttg	gctacagtta	540
aatttccagg	ggattaaagg	gttttgggcn	aatt			574

<210> 464

<211> 580

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(580)

<223> n = A,T,C or G

<400> 464

ggtacctagt	aagctctccc	tcctcccacc	ctccaccctc	aaggaggccc	cagtgtcagt	60
------------	------------	------------	------------	------------	------------	----

tgttcccctc	tgggtccatg	agttcttata	athtagctcc	cacttataag	caagaacatg	120
cagtatttgg	ttttctgttc	ctgccttagt	ttgctaagga	taacggcctc	cagctccatc	180
cagttcctgc	aaaggacatg	atcctgttct	ttctatggct	gtatagtatt	ccatgggtga	240
tattttaccac	attgtcttta	tccagtcctg	cattgatggg	cttttgggtt	gattagtagc	300
tttttgaatg	gtaacttttc	tacagaagta	cgcggggctt	ttttttttgc	tgtaggcccg	360
ggtaggttgc	gccgaaatgg	gcangttcat	gaaacctggg	aaggtggtgc	ttgtcctgct	420
ggacgctact	ncggacgcaa	agctgtcatc	gtgaaagaac	attgatgatg	gcaccttana	480
cgccctacag	ccatgctctg	gtggctggaa	ttgaccgcta	cncgccgaaag	tgacagctgn	540
catgggcaag	aagaagatcg	ccagagatca	aagataaaan			580

&lt;210&gt; 465

&lt;211&gt; 578

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(578)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 465

ggtagctttt	tttttttttt	tttttttttt	ttctacatca	ctttanaata	tttattgtat	60
tccttaaatg	atttctttaac	atgtatagca	ctctttaatc	aagaatataa	agtcactctac	120
ttagaatcac	attatcttaa	agatgcatac	tggaaatgata	agtttgaaga	tgtaactatc	180
aacaattctt	ttcaaaatca	tatcaatata	ttactctcat	ggaacttgca	cattctaaga	240
aggggtcatt	tttcccccca	gtaccaatat	tacattatct	gacagggata	ataaaatgag	300
cagagactgg	aaatcacaga	caataacatt	gctttctcaa	ttaacagaaa	ggattcataa	360
catattcctt	aacggtagat	gtgatttgta	gagaatgtgg	aaaagaacta	ttgagaagtc	420
cacctgctgc	ccaaactgag	gcacattagg	gtggttggtg	gangagttat	atttgagggt	480
ccatttttcc	ttagggttta	aaagcatgtc	cnggttgng	gtnatttgcc	attaagtctn	540
ttttcaataa	aaagaattag	gggagaaaag	ttggaaaa			578

&lt;210&gt; 466

&lt;211&gt; 546

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(546)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 466

accaatacca	ccaattttgt	agacatcctg	gagaggcagg	cgcaagggtc	tgtcagttgg	60
acgagttggg	ggtaggatgc	agtccagagc	ctcaagcagc	gtgggtccac	tggcattgcc	120
atccttacgg	gtgactttcc	atcccttgaa	ccaaggcatg	ttagcacttg	gctccagcat	180
gttgtcacca	ttccaaccag	aaattggcac	aaatgctact	gtgtcggggg	tgtagccaat	240
tttcttaatg	taagtgtgta	cttccttaac	aatttcctca	tatctcttct	ggctgtaggg	300
tggctcagtg	gaatccattt	tgtaaacacc	gacaattagt	tgtttcacac	ccagtgtgta	360
agccagaang	gcatgctctc	gggtctgccc	attcttggag	ataccagctt	caaattcacc	420
aacaccagca	gcaacaatca	ggacagnaca	gtcggnetga	gatgtccctg	taatcatgtt	480
ttgataaaag	tctctgtgtc	ctggggcatc	aatgatagtc	acatagtacc	tcggccgcga	540
ncacgc						546

<210> 467  
 <211> 445  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(445)  
 <223> n = A,T,C or G

<400> 467  
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 acagtataag aagggcaagg attctttgta tgcccaggga aggaggcgct atgatcggaa 120  
 gcagagtggc tatggtgggc agacaaagcc aattttccgg aagaaggcta agaccacaaa 180  
 gaagattgtg ctaaggctgg aatgtgttga gcctaaactgc agatccaaga ggatgctggc 240  
 tattaagaga tgcaagcatt ttgaactggg aggagataag aagagaaagg gccaaagtgc 300  
 ccagttctaa actttgggat atttttcttc aattttgaag agaaaatggt gaaccataga 360  
 aaagttaccg gagggaaaat aaatacagtg atattccaaa aaaaaaaaann nnnnnaaaaa 420  
 aaagtncttg gccgggaccc cctaa 445

<210> 468  
 <211> 566  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(566)  
 <223> n = A,T,C or G

<400> 468  
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 tcctgcgtaa gaagatcgag aagcggaacc tcaaattgcy gcagcgggaa ctaaagtctc 120  
 agggggcctc aaatctgacc ctatcggaac ctcaaaatgg agatgtatct gaagaaacaa 180  
 tgggaagtag aaaggttaaa aaatcaaaac aaaagcccat gaatgtgggc ttatcagaaa 240  
 ctcaaaatgg aggcattgtc caagaagcag tgggaaatat aaaagttaca aagtctcccc 300  
 agaaatccac tgtattaagc aatggagaag cagcaatgca gtcttccaat tcagaaccaa 360  
 aaaaaaaaaa nnaaaaaaag tacttttttt tntnnnnnnn ttttttttag gaatgggtgt 420  
 tgaacttgac ctttcttaat gggggctggt tttaggctat atggngtaaa tttttctctt 480  
 ttacaagggt tttcctagn ncaaaaactg tcctttggac taccgtaaat tacaggggtt 540  
 taaaggttnt ggggcaatta aanttn 566

<210> 469  
 <211> 586  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(586)  
 <223> n = A,T,C or G

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<400> 469
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catccccgtt ccagtgagtc caccctctaa atcaccacga tcaaaaggga caagcatcaa      120
gcacgcagca atgcagctca aaacgcttag cctagccaca cccccacggg aaacagcagt      180
gattaacctt tagcaataaa cgaaagttaa actaagctat actaacccca gggttgggtca      240
atttcgtgcc agccaccgcg gtcacacgat taaccacaagt caatagaagc cggcgtaaag      300
agtgttttag atcacccctt cccaataaaa gctaaaactc acctgagttg taaaaaactc      360
cagttgacac aaaatagact acgaaagtgg ctttaacata tctgaacaca caatagctaa      420
gacccaaact gggattagat accccactat gcttagccct aaacctnaca gttaaataca      480
caaaactgct cgccagacac tcgagccaca gcttaaaact caaggacctg cgggcttcat      540
atccctctag angacctgtc tgtaatcgat aaccccgatc aacctn      586

```

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<210> 470
<211> 487
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(487)
<223> n = A,T,C or G

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<400> 470
acggccaggg ctattgggtg aatgagtagg ctgatgggtt cgataataac tagtatgggg      60
ataaggggtg taggtgtgcc ttgtggtaag aagtgggcta gggcattttt aatcttagag      120
cgaaagccta taatcactgc gcccgctcat aaggggatgg ccatgggctag gtttatagat      180
agttgggtgg ttgggtgtaa tgagtgaggc aggagtccga ggagggtagt tgtggcaata      240
aaaatgatta aggatactag tataagagat caggttcgct ctttagtggt gtgtatgggt      300
atcattttgt ttgagggttag ttgattagat cattgttggg tggtgattaa tcngttgntg      360
atgaaatatt tggagggtgg gatcaatana gggggaaata gaatgatcag tacctcgccc      420
gcgaccacgc taaggggcaa tccacacact ggcggncgta ctaatggatc ccaactcgga      480
ccagctt      487

```

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<210> 471
<211> 488
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(488)
<223> n = A,T,C or G

```

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<400> 471
actgcggcgg gtaggcctag gattgtgggg gcaatgaatg aagcgaacag attttcgttc      60
attttgggtt tcagggtttg ttataatttt ttatttttat gggctttggt gagggaggta      120
ggtggtagtt tgtgtttaat attttttagtt ggggtgatgag gaatagtgtg aggagtatgg      180
gggtaattat ggtgggcat acggtagtat ttagttgggg cattcccgcg tactatttg      240
tatttttggt agagacaggg ttttgccatg ttggccagga tggctctgaa ctactgacct      300
caggatgatc tcacgccttt atctcccaaa gtgctgcgat tacaggcatg aggcaccact      360
cctggccaca ttcttatatt taaaaaaaaa gcacaactct attgtctact ggtgttcttt      420
tacctgaagt tcaaaactta gctcttcaaa aaaaaaaaaa aaaaaaagta cctnggccgc      480
naccacnc      488

```

<210> 472  
 <211> 586  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(586)  
 <223> n = A,T,C or G

<400> 472

ggtacttgat	gccctccaag	caattaaaac	caagggcaaa	cgagcccat	tcacaaattt	60
tgaccctct	actctccttc	cttcatecct	ggattttctgg	acctaccctg	gctctctgac	120
tcctcctcct	ctttatgaga	gtgtaacttg	gatcatctgt	aaggagagca	tcagtgtcag	180
ctcagagcag	ctggcacaat	tcagcagcct	tctatcaaag	gttgaagggtg	ataacgctgt	240
ccccatgcag	cacaacaacc	gcccaccca	acctctgaag	ggcagaacag	tgagagcttc	300
atthttgatga	ttctgagaag	aaacttggtc	ttctcagaag	acacagccct	gcttctgaca	360
taatccagta	aaataataat	ttttaagaaa	ttaattttatt	tcaatattag	caaagacagc	420
atgccttcaa	atcaatctgt	aaaactaaga	aacttaaat	ttagttctta	ctgcttaatc	480
aaataataat	tagtaagcta	gcaaatagta	atctgtaagc	ataagcttat	gcttaaatca	540
gttttagtttg	aggaatcttt	aaaattacca	ctaantgatt	gnatgg		586

<210> 473  
 <211> 575  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(575)  
 <223> n = A,T,C or G

<400> 473

ggtacaaagg	ggaaagggtg	catgccaaact	atcgaattat	aggatatgta	aaaaatataa	60
gtcaagaaaa	tgccccaggg	cccgcacaca	acggctcgaga	gacaatatac	cccaatggaa	120
ccctgctgat	ccagaacgtc	accacaaatg	acgcaggaat	ctatacccta	cacgttataa	180
aagaaaatct	tgtgaatgaa	gaagtaacca	gacaattcta	cgtattctcg	gagccacca	240
agccctccat	caccagcaac	aacttcaatc	cggtggagaa	caaagatatt	gtggttttaa	300
cctgtcaacc	tgagactcag	aacacaacct	acctgtgggtg	ggtaaacaat	cagagcctcc	360
tggtcagtcc	caggctgctg	ctctccactg	acaacaggac	cctcgttcta	ctcacgcca	420
aagaatgaca	taggacccta	tgaatgtgaa	atacagaacc	cagtgggtgc	caccgcant	480
gcccantcac	cctgaatgtc	cgtatgagtc	aatcctgccg	gcggccgttc	naanggcgaa	540
ttccacacac	tggcggccgt	ctaattggatc	cactc			575

<210> 474  
 <211> 515  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(515)

<223> n = A,T,C or G

<400> 474

ggtacgtggg	ggactcaact	gaaatcatgg	cgtttgacag	cacttggaag	gtagaccgga	60
gtgaaaacta	tgacaagttc	atggaaaaaa	tgggtgttaa	tatagtgaag	aggaagcttg	120
cagctcatga	caatttgaag	ctgacaatta	cacaagaagg	aaataaattc	acagtcaaag	180
aatcaagcgc	ttttcgaaac	attgaagttg	tttttgaact	tgggtgtcacc	tttaattaca	240
acctagcaga	cggaaactgaa	ctcaggggga	cctggagcct	tgagggaaat	aaacttattg	300
gaaaattcaa	acggacagac	aatggaaacg	aactgaatac	tgtccgagaa	attataggtg	360
atgaactagt	ccagacttat	gtgtatgaag	gagtagaagc	caaaaaggatc	tttaaaaagg	420
attgaccatt	attcttggcg	cacagtccaa	aatncaaatt	ggccagaaga	tctatattgn	480
acctgcccgg	gcggccgttc	gaaaggccaa	ttcca			515

<210> 475

<211> 580

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(580)

<223> n = A,T,C or G

<400> 475

acaaagatct	gacatgtcac	ccagggaccc	atttcaccca	ctgctctgtt	tggccgccag	60
tcttttgtct	ctctcttcag	caatggtgag	gcggataccc	tttcctcggg	gaagagaaat	120
ccatggtttg	ttgcccttgc	caataacaaa	aatggttgaa	agtcgagtgg	caaagctggt	180
gccattggca	tctttcacgt	gaaccacgtc	aaaagatcca	gggtgcctct	ctctgttggg	240
gatcacacca	attcttccta	ggttagcacc	tccagtcacc	atacacaggt	taccagtgtc	300
gaacttgatg	aaatcagtaa	tcttgccagt	ctctaaatca	atctgaatgg	tatcattcac	360
cttgatgagg	ggatcggggg	agcggatggg	gcgggcatca	tgagtcacca	gatgagggat	420
tcttttgtg	ccccaaagat	ctttctnact	ttgacaactt	gaccttggnc	gcgaccaccc	480
taaggcgaat	tcacccactg	gcggccgtct	aatggatecn	nctcggneca	acctggntat	540
atggcntaan	tnntccnggn	naaatntntc	ccncaatcc			580

<210> 476

<211> 593

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(593)

<223> n = A,T,C or G

<400> 476

ggtactatgt	gggacagtat	tttgcaaata	caagaagagc	tcagggcagc	tgtggagctg	60
gatggtctgc	ctggcaggcc	tctgtgcagt	ctgcctgtct	atcctgtccc	ctttttgggg	120
cttgatcctc	ttctcgggtg	catgcttcct	catgtatact	tacttatctg	gccaaagaatt	180
gttacctgtg	gatcagaagg	cagtcctggg	gacaggtgtg	attgcgggct	tggccatgct	240
ttgtgcaagt	atctggatga	gctgggcttc	acggatattg	ccggagtttt	gaatgaaaat	300
ggcccaggag	ctgaggaatt	gcgaagaacc	tgctctccgc	gcctctcggg	gctccaaatg	360
gacatcacga	accagtgcag	ataaaagatg	cttacagcaa	ggttgcaaca	atgctgcagg	420



acaaaagact	gtgggctgtg	atcaacaatg	ctnggggtgct	tggccttttcc	actgatgggg	480
agcttntnt	tatgatgact	acnaacaatc	ntggccgnga	acttttttga	actgngaggg	540
acaaaacggt	tttccttttt	taaaaaancc	aagggngggtg	gnnaattncn	nnt	593

<210> 477  
 <211> 595  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(595)  
 <223> n = A,T,C or G

<400> 477						
actacaagg	ttagcattg	ctctgctgg	cgacattccc	ccagtctatg	ggttggtatgc	60
atccttttt	ccagccataa	tctacctttt	cttcggcact	tccagacaca	tatccgtggg	120
tccgtttccg	attctgagta	tgatgggtggg	actagcagtt	tcaggagcag	tttcaaaagc	180
agtcccagat	cgcaatgcaa	ctactttggg	attgcctaac	aactcgaata	attcttctact	240
actggatgac	gagaggggtga	gggtggcggc	ggcggcatca	gtcacagtgc	tttctggaat	300
catccagttg	gcttttgga	ttctgcggat	tggatttgta	gtgatatacc	tgtctgagtc	360
cctcatcagt	ggcttcaacta	ctgctgctgc	tgttcatggt	tttggnttcc	caactcaa	420
tcattttttca	agtgcagtc	ccgtcacaca	ctgatncagt	ttnaatttta	aaagtacctc	480
ggccgcganc	accctaaggc	gaattttnaac	ccactngcgg	ccgttctant	ggatccaact	540
ngnnncaaac	ttngngaata	ngggcataac	ngntcctggg	gaaatnnttc	ccnct	595

<210> 478  
 <211> 420  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(420)  
 <223> n = A,T,C or G

<400> 478						
ggtacacagt	atgtataaca	atgcatacta	tgggtgtggag	ttaatccaa	ttaccatatt	60
ttatatattat	tggtcacaac	agcatacatt	ttatgctcca	aaatacatgg	atctgacaaa	120
atggttacat	ttaatgttct	tttaaagaaa	gatgaactaa	atttaagaag	aattgggtttt	180
tcctaataatc	tcattttcaa	attactgata	caaatttgcc	agagaaacaa	ttacatgttt	240
tacctaacat	caaataatct	ccagttttcta	agacagatgc	atttcttggt	caatttccaa	300
aagtaaataa	aggcttttcta	actgaaaaca	tttgcacccc	tagctctcta	aagtaattaa	360
aaagaaaatt	acaaaaaatg	acctctaagc	ttctgaacag	cccacttant	tacataaagt	420

<210> 479  
 <211> 602  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(602)

<223> n = A,T,C or G

<400> 479

ggtacctagt	cagatggtag	acgagctgtc	tgctgccgca	ggagcacctc	tatacaggac	60
ttagaagtag	tatgttattc	ctgggttaagc	aggcattgct	ttgccctgga	gcagctattt	120
taagccatct	cagattctgt	ctaaaggggt	tttttgggaa	gacgttttct	ttatcgccct	180
gagaagatct	accccaggga	gaatctgaga	catcttgect	acttttcttt	attagctttc	240
tcctcatcca	tttcttttat	acctttcctt	tttggggagt	tgttatgcca	tgatttttgg	300
tatttatgta	aaaggattat	tactaattct	atctctctat	gtttattcta	gttaaggaaa	360
tgttgagggc	aagccaccaa	attacctang	ctgaggttag	agagattggc	cagcaaaaac	420
tgtgggaaga	tgaactttgt	cattatgatt	tcattatcac	atgattatag	aaggctgtct	480
taatgcaaaa	aacatactta	catttnanac	atattccaan	gggatctcnc	attttgtaaa	540
aagttgacta	ttactggagt	aaacctgtt	ttccctaant	ttaacttttt	ttgggaaatt	600
at						602

<210> 480

<211> 600

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(600)

<223> n = A,T,C or G

<400> 480

ggtacttttt	tttttttttt	tttttttttc	ggtttgaggg	ggaatgctgg	anattgtaat	60
gggtatggan	acatgtcata	taagtaatgc	tagggtagt	ggtaggaagt	tttttcatag	120
gaggtgtatg	agttgggtcg	agcggaatcg	ggggtatgct	gttcgaattc	ataaaaaacag	180
ggaggttana	agtaggggtc	tggtgacaaa	atatgtttgt	taaagtccag	ggganagtgc	240
gtcatatggt	gttcctagga	aaattgtagt	ggtgaggggt	tttattataa	taatgtttgt	300
gtattcggct	atgaaaaata	gggcgaaggg	gcctgcggcg	tattccatgt	tgaagcctga	360
gactagtctg	gactccccct	cggcaagggtc	caaaggggtt	ccggttgggtc	tcttctagt	420
tggagataaa	tcatattatg	gccnagggtc	atgatggcag	gagtaatcaa	aggggtcntt	480
tgttttgaaa	aagggnggan	aggttaaagg	ancccccttt	tataatgggtg	atantaaaaa	540
gatgcttggg	ggactcnttt	aaaatggtgg	ctcttcttcc	angcnccac	aggcgtattt	600

<210> 481

<211> 594

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(594)

<223> n = A,T,C or G

<400> 481

cgaggtagcg	ccagggtctat	tggttgaatg	agtaggctga	tggtttcgat	aataactagt	60
atggggataa	ggggtgtagg	tgtgccttgt	ggtaagaagt	gggctagggc	atttttaatc	120
ttagagcgaa	agcctataat	cactgcgccc	gctcataagg	ggatggccat	ggctagggtt	180
atagatagtt	gggtgggttg	tgtaaatgag	tgaggcagga	gtccgaggag	gttagttgtg	240
gcaataaaaa	tgattaagga	tactagtata	agagatcagg	ttcgtccttt	agtgttngnt	300

atggttatca	tttgttttga	ggttagtttg	attagtcatt	gttgggtggt	gattantccg	360
ttggttgatga	gatattttgga	ggtggggatc	aatagagggg	gaaatagaat	gatcagtacc	420
tgcccnggcg	gncgctcgaa	anggcgaatt	ccaccacact	ggcgggcn	ctaattggatn	480
cgaccngtc	ccaacttgcg	taatcatggc	atacttgtn	ctggtgaaat	ggtatccctc	540
acaattccca	cacatacaac	ccgaacctaa	atgtaaanct	gggggcctat	natn	594

&lt;210&gt; 482

&lt;211&gt; 600

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (600)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 482

accatgaaat	acatatatatt	cataagggttc	agttacaaaa	tggattgttt	caaattggcaa	60
tttcttacac	taacctgatt	atgaaaaaaaa	gaagtctgta	tcatctgctt	ccaagtctgt	120
tatgtccaaa	tatatatttaa	ttatgcattt	attttgctac	ttttataaat	attagagatt	180
tcaccttaaa	ttatttttgt	aactagttct	agaacatggt	ttccaattat	tatttttcta	240
atggagacat	ataattgacc	tatgtttatg	catatatggt	ctctacacag	tgaaactttt	300
tttaaaaaga	atagtaaaga	aaatgcggaa	gctctggctc	tccaaggcaa	agtcaaaaaa	360
aaaaaaaaag	cgggggggaa	tgcgagggaac	attttattac	acctnctgat	tttctctctt	420
gagntttatt	ttctccccct	ggntattttgt	taatgctaga	aactgnattc	ctaanaaagc	480
atacctcttt	caggngagcn	tgataattgg	gaanaatttt	gttccttttag	tntgaacatt	540
ttattaagaa	gngattccta	ataaaganac	aangggctnt	ttaattnttt	gggggnngga	600

&lt;210&gt; 483

&lt;211&gt; 605

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1) ... (605)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 483

acagaacatc	gtcagcacta	gcacagttta	cagaacctca	cagacccaaa	ggaacatcaa	60
taggcaaagc	gactacagga	ggcgtgtgtc	cgcgtgggcg	aggtaaagag	ggtcagtatt	120
ggtcaagtga	cagtgtcggt	aatctggcaa	gacagtgatg	ttaagaaggt	tcatagttta	180
agaattatct	aaaatatttt	aaaaactata	aagctgcaac	acatgatttt	tacacctagt	240
tactagaaaa	ctaaggaaag	cacttattag	ctctgaataa	agtaacatgg	aaagcacttt	300
tactaatcga	caaaaaaacc	ttctaattgca	ttatcagaaa	gattttataa	tacaaggagg	360
catattgctc	agtcagaagg	ggttctataa	gaaaagcact	tactaagtta	gcgactaaca	420
gaacaaccng	tttaaagatg	aattaaatgc	cccatttggg	gangcatggc	aggtgttaag	480
anaaangaaa	agcntaagaa	aacatttnct	ggttatanca	aacctttntt	tnttatctac	540
tgnatttgac	aaaaattaac	cntttaaagt	tttaccnngg	cacttnnttc	nttgtcctcg	600
gcccg						605

&lt;210&gt; 484

&lt;211&gt; 591

<212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (591)  
 <223> n = A,T,C or G

<400> 484

ggtacgcggg	tggggagacc	ctggggtagc	agccactgac	ctcacacctg	gaggaagctg	60
tgtgaccgat	tcatgagctt	atgcctgaag	acagagcaag	cactccccgc	accacgacga	120
tgacgttcac	ttgttttggt	tttttcgac	tcttcaacgc	cttgacctgc	cgctctcaga	180
ccaagctgat	atgttgagac	ggctttctca	ggaaccacat	gttcctctac	tccgtcctgg	240
ggtccatcct	ggggcagctg	gcggtcattt	acatcccccc	gctgcagagg	gtcttccaga	300
cggagaacct	gggagcgctt	gatttgctgt	ttttaactgg	attggcctca	tccgtcttca	360
ttttgtcaga	gtcctcctcaa	ctatgtgaaa	aatactgttg	cagccccaaa	gagagtccag	420
atgcaccctg	aaagatgtgt	agtggaccgc	acttcgcggg	naccttccta	atnatttcaa	480
ctgggtgnga	ctgtggccct	gcctgttttc	ttcttagggg	agactttang	anggcgagcn	540
tcataccgga	tagttttctt	taggaaactn	aggaaccttg	gctcaggacc	a	591

<210> 485  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1) ... (605)  
 <223> n = A,T,C or G

<400> 485

ggtacgcggg	gatataaagg	gagagagcaa	gcagcgagtc	ttgaagctct	gttnggtgct	60
tnggatccat	ttccatcggn	ccttacagcc	gctcgtcaga	ctccancagc	caanatgggtg	120
aancagatcg	agagcaagac	tgcttttcan	gaagccttgg	acgctgcang	tgataaactt	180
gtagnagtgt	acttctcagc	cacgtgggtg	gggccttgca	aatgatcaa	gcctttcttt	240
cattccctct	ctgaaaagta	ttccaacgtg	atattccttg	aagtagatgt	ggatgactgt	300
caggatgttg	cttcagagtg	tgaagtcaaa	tgcatgccaa	cattccagtt	ttttaagaag	360
ggacaaaagg	tgggtgaatt	ttctggagcc	aataaggaaa	agctttgnag	ccnccattaa	420
tgaatgagtc	taatcatgtt	ttctgaaaac	ataaccagc	catttggtta	tttaaaactt	480
gnaanttttt	nagntaccna	aattttaaag	ctgaagacat	aaccgggtgc	catttgctgt	540
acaatnaaaa	attatgccaa	cacttttttn	anaanganan	nnntttcctn	gggaaatngt	600
anccc						605

<210> 486  
 <211> 319  
 <212> DNA  
 <213> Homo sapiens

<400> 486

ggtaccagtt	gtagccataa	agattctggg	actcattatg	gactactaga	aggacctcct	60
tcccttctgc	gacattgaac	ggcagacat	caatattggt	ctgggcactg	tttggcaggt	120
tccagaaggt	taaaagcgag	gctgtgagca	ggagtccttg	ccagggaatg	cacactctgt	180
atggacaggc	tgaaggggac	cccattggtc	ctgctgcctg	cttgctcctc	gtggagaaga	240

gcttgggctc caggaactct cttgtcaggg ctgctgtgac tgtcagctct gctgtccttc 300  
ctacctctgt gtcccgcgt 319

<210> 487  
<211> 586  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)... (586)  
<223> n = A,T,C or G

<400> 487  
acgcgggagc tgagtgtccc gcgggggccc aagcgtttac tttgaaaaaa ttagagtgtt 60  
caaagcaggc ccgagccgcc tggataccgc agctaggaat aatggaatag gaccgcgggt 120  
ctatcttggt ggttttcgga actgaggcca tgattaagag ggacggccgg gggcattcgt 180  
attgcgcgcg tagagggttaa attcttgga cggcgcaaga cggaccanag cgaaagcatt 240  
tgccaagaat gttttcatta atcaagaacg aaagtcggag gttcgaagac gatcagatac 300  
cgtcgtagtt ccgaccataa acgatgccga ccggcgatgc ggccggcgta ttccatgacc 360  
cgccggggcag ctttcnggaa accaaaagtct ttgggttncc gggggagtat ngttcnaaaa 420  
aaaaaaaaaa aaaaaaaagt cctnggccgg ganccttcta ngngnaaatt cagccactgg 480  
nggcgttctn atggatncna gtcgggncca acntggcgta atatggcata cttgttcctg 540  
gngnaaatgt ttccctccaa attccccaaa tacgggcgga gcttaa 586

<210> 488  
<211> 487  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1)... (487)  
<223> n = A,T,C or G

<400> 488  
acagctgggt ggacctatct atgcattctc accagcagct ggagcatctc cacccttggt 60  
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aaggagctcc tgaagggtct ccctggccag ggagcctcga atcttcagtc tctcagagac 180  
cacagctggg gttataagtt tatagttggg aacttcctta cagagtttat cataggttagc 240  
tttgtcaaac aagactaagt tattgagctt gtcccgaact ttgcctttgg accacttctt 300  
ctttttggcc ttgccccggg atttgttcac tgggtctttg tctttcttgg ccgactttcc 360  
agcgtccttc ttcttcttgt cgtccttaag cggcattgcg aanctcggag aataagcaac 420  
aaacaccgca cctcgtcnaa gatgtcggac aaaaaaggc ccgcgtacc ttnggccgcg 480  
ancacnc 487

<210> 489  
<211> 589  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature

<222> (1)...(589)

<223> n = A,T,C or G

<400> 489

acgcgggggtc	tctcctcagg	cagcagcaac	gcggaggaaa	cgggagtgaa	cggagagcgt	60
agtgaccatc	atgagcctcc	tcaacaagcc	caagagtgag	atgaccccag	aggagctgca	120
gaagcgcagag	gaggaggaat	ttaacaccgg	tccactctct	gtgctcacac	agtcagtcaa	180
gaacaataacc	caagtgtctca	tcaactgccg	caacaataag	aaactcctgg	gccgcgtgaa	240
ggccttcgat	aggcactgca	acatgggtgct	ggagaacgtg	aaggagatgt	ggactgaggt	300
acaaagatta	aattaagaca	cggtaaattg	actaaatatt	tggtttttat	ataaataaaag	360
gtcataacca	caccgttgac	atgtaatact	gttataatac	aacagttaaa	ctttgtgagt	420
ctcaacagaa	gtcatctgta	gttnaacagg	aaacaaaagt	tgaaaaaaaa	catgttnaaa	480
caaaactctg	ggactaacag	gtcgggattg	taagtacaac	caacatattc	ctcacttctg	540
ggtntttcaa	gtttacagta	cttggccgga	ccccettang	ggnattcac		589

<210> 490

<211> 591

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(591)

<223> n = A,T,C or G

<400> 490

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gttttccttg	ttttcagccc	cccgactcca	gcccgcagca	catttcctgt	gtccgtcagt	120
aattgtgtcc	tctctttatg	cttgcttggg	gaatgttggt	ttctgactag	gctgatcatt	180
atctaaagaa	tctaattctg	ttgattttta	aaacttttag	gaccataaac	gttggtgttca	240
tatatggaca	tggaaatatt	tatataaatt	tatagaaaat	aaccttttag	atgggtcaaag	300
tgtgaaggagt	tttttttgc	agataatcat	ttctacttca	aaaacatttc	atgcaatatt	360
agaataaagt	tctgtgcatt	cctctnnnan	aaaaannnnn	nnnnnnnanna	nnnnnnnnnn	420
nggaanannn	nnnnnnnnnn	aaaaaagtac	ctgcccnggc	ggccgttcaa	aaggcgaatt	480
ccacccactg	gcggccgttc	taatggatcc	anctcggacc	aacctggnga	aacatggcat	540
acctgttctc	ggngaaatgg	tntcccttac	aattccacac	aataaaaaccg	g	591

<210> 491

<211> 583

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(583)

<223> n = A,T,C or G

<400> 491

ggtacatata	aatccttttg	gtgtcacttg	tagcaagcct	tgcttctgca	gttttcggat	60
tttcctcaaa	gctttgttgc	gcttgcgtag	aattcgaaagt	ggactaaagc	caacagcatc	120
gataagtttc	cgcctaaaga	aaccaatggt	tgcaaaagtag	ataggagatg	gacatctgaa	180
aattttcact	ccttctggct	catacatatc	ataataatct	tttttattct	tatagatggt	240
ggttcttcca	atattagcca	gcgtgctgca	ttttggaaat	tgggtcctga	acacgatggt	300

tagcagttga	aatgccacac	tagctgccag	gcctaaccgg	agtcccagga	caatgggtgaa	360
agatgaaagg	catgaaccca	aataaacaat	catatttggg	cnttccccc	atctgctatt	420
ttaaccaact	gcatacaat	tcctttaagt	tccaatgcta	aactggcang	acnggcnttt	480
gtagaagngc	cangaaaaat	cagngcttga	cgacaatcac	accatgatgn	nccataancc	540
acaatctggg	nttggtcnn	ggcctctgaa	cnnngactgg	nag		583

<210> 492  
 <211> 597  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(597)  
 <223> n = A,T,C or G

<400> 492						
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gactggggaa	gggaggggag	actatgtgtg	agcttttttt	aaatagaggg	attgactcgg	180
atgtgagtga	tcattagggc	tgaggtctgt	ttctctggga	ggtaggacgg	ctgcttcctg	240
gtctggcang	gatgggtttg	ctttggaaat	cctctangag	gctcctcctc	gcatggcctg	300
cagntctggc	acaaccccga	gttgtttctc	cgtctatcga	tttctttcct	ncaggtagag	360
ttttctttgc	ttatgttgaa	ttccattgcc	tttttctcat	cacaaaaaat	gatgttgagg	420
atcgnntctt	ttgtttggct	gaattatggg	ntttttaant	ataaaccaaa	nttttttatt	480
aacattctta	aanaagggaa	agtnnaatgt	ncnttggnc	cnaccncgct	aanggcnaat	540
ttcanccent	ggnggccgtg	nttnnggate	cnnncnngnn	ccaannntgg	nntantn	597

<210> 493  
 <211> 591  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(591)  
 <223> n = A,T,C or G

<400> 493						
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attatgcttt	gttgtttgga	tatatggagg	atggggatta	ttgctaggat	gaggatggat	180
agtaataggg	caaggacgcc	tcctagtgtg	ttagggacgg	atcgagagaat	tgtgtaggcg	240
aataggaaat	atcattcggg	cttgatgtgg	ggaggggtgt	ttaaggggtt	ggctagggta	300
taattgtctg	ggtcgcctag	gaggtctggg	gagaatagtg	ttaatgtcat	taaggagaga	360
aggaagagaa	gtaagccgag	ggcgtctttg	attgtgtagt	aaggggtggaa	ggtgatttta	420
tcggaatggg	aggtgattcc	taaggggggtg	gttgatcccc	tttctgcca	agaataagaa	480
gtggaatgct	gctagggctg	cattaatgaa	ggccaagatg	aaatgaaagg	taaaanaatcn	540
ngtgangggg	gactgctact	gatanctctc	caaatcatga	ataggntgtc	c	591

<210> 494  
 <211> 374  
 <212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(374)

<223> n = A,T,C or G

<400> 494

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acagttactt	gtcttctggt	ttgttgaaac	agtaagtcan	acaacatttg	ccacaataat	120
gtctgtcaaa	gtgacttgcc	ataaacaccc	cagcaccaca	ttcatcanaa	gggcactctc	180
gacgaaggcg	actaattttg	ccattctcat	ccaccttata	atatttcagg	acagccagct	240
taaccttctt	tctcttggtc	ttattcttct	tgggagnggt	gtaagacttc	ttcttctttt	300
tcttagcacc	accacgaagt	ctcaacacaa	gatgaagagt	agactccttt	tgaatattgt	360
aagtcagaca	aagt					374

<210> 495

<211> 597

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(597)

<223> n = A,T,C or G

<400> 495

actgggagaa	ggtgctgacg	ccgacgaagt	ggtggatggg	cttcccgtg	caggtgaacc	60
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tgctttctgg	gtttttacaa	attctgcatt	ttccacactg	aggagtaaag	agcgggatga	180
ctttatcacc	tggtttgact	gtagtcaccc	cttctccaac	actttccacg	atgccggctg	240
cctcatggcc	taaaatcaca	ggaagggggg	tcaccagggt	gccactaacc	acatgctcat	300
ctgaacgaca	gattcctgca	gccaccatct	taatgcgaac	ttcatgagcc	ttaggagggtg	360
caacctctac	ctcctcaatg	gaaaagggtt	tctttaactc	ccatagcaca	actgctttgc	420
atgtgattac	ctgtaaactc	agctacttgt	gaaggctgag	gcanganaat	actttgaacc	480
ccggaaggca	aaggttgcaa	tgagccnana	acaccattgn	acttccanct	gggcaatana	540
aaaaaactca	tttttctctg	tggtcacaat	gatctgcttc	ttgcaaacaa	gagntgn	597

<210> 496

<211> 604

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(604)

<223> n = A,T,C or G

<400> 496

ggacgcgggt	gctgactgca	tagctctttt	tcttgagagg	ctctccattt	tgattcagaa	60
agtttagcata	tttattacca	atgaatttga	aaccagggtt	tttttttttt	tttgggtgat	120
gtaaaaccaa	ctccctgcc	ccaaaataat	taaaatagtc	acatttatct	ttattaggta	180
atcacttctt	aatttatgt	tcatactcta	agtatcaaaa	tcttccaatt	atcatgctca	240



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cctgaaagag gtatgctctc ttaggaatac agtttctagc attaaacaaa taaacaaggg      300
gagaaaataa aactcaagga gtgaaaatca ggaggtgtaa taaaatgttc ctgcgattcc      360
ccccgcgttt tttttttttt ttgactttgc cttggaaagc cagagcttcc cgcattttct      420
ttactattct ttttaaaaaa agtttcactg ngtaaaagaa catatttgcc taaacatang      480
tcaattatat gtctccatta naaaaaaata attggnaaac attgtctana actagttcca      540
aaataattaa ggggggaaatc tntaatnttt ttaaagtgcc naaanaatgc ctaanttaaa      600
antt                                              604

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<210> 497

<211> 587

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(587)

<223> n = A,T,C or G

<400> 497

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acattaatga aatgtttcca aagaaatact gaacaatata tactctagtt tgctgaggtt      60
ccagctcgag ttcaaacctt attccttgtc aataaaaatc agcatggatc ttagatgatc      120
tagaatcacac tgtgttttga aatccacagc tggtttcatt ttttaaccatt atgaaaaacc      180
agtacttttt tttttttttt tttttttttc nctnggacca taaattttta ttggcagggtc      240
aggaaaaaag ccggggggtta ggggtcccttc ctccccatcc ctctacccan aanacaccct      300
ccaaaggaca gcagaagccc cagagcctgc tgcctcagag gaccttggag gcagacaaat      360
tggtgtagng atcttccctgt cctcaancca ggctgcggta ggtggnaatc tncgtctcca      420
gccgcgactt gatgtccatg aaccgctggt cctcggccgc gacaccctta nggcgaattn      480
caccnactgg gnggcgttct agtggatccg actcggacca acctngcgna atcatggcan      540
actggttncn gnnngaaatg gtttccctnc aattccccaa cataccn                      587

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<210> 498

<211> 354

<212> DNA

<213> Homo sapiens

<400> 498

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acgcggggcaa taaagctaaa actcacctga gttgtaaaaa actccagttg acacaaaata      60
gactacgaaa gtggctttta catatctgaa cacacaatag ctaagaccca aactgggatt      120
agatacccca ctatgcttag ccctaaacct caacagttta atcaacaaaa ctgctcgcca      180
gaacactacg agccacagct taaaactcaa aggacctggc ggtgcttcat atccctctag      240
aggagcctgt tctgtaatcg ataaaccccc atcaacctca ccacctcttg ctacgcctat      300
ataccgccat cttcagcaaa ccctgatgaa ggctacaaag taagcgcaag tacc                      354

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<210> 499

<211> 632

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(632)

<223> n = A,T,C or G

<400> 499  
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 cttccatttc tgcaaaagtc aacaactcta gcttaattgg agtaggctat actcagactc 120  
 tgaggcctgg tgtgaagctt acactctctg ctctggtaga tgggaagagc attaatgctg 180  
 gagggcaca ggnctgggctc gccctggagt tggaggctta atccanctga aaagaaacct 240  
 ttgggaatgg atatcaaaag aattggcctt aatatatttc cattgngacc agcagcaggc 300  
 tttttttccc ccagaagatg atcaaaacaa aaggatgac tcaacaagaa ctgtatttta 360  
 aagtatttaa ganagtcttt ggtaactnng ttctaagtng gtatctaatt acccaatgct 420  
 gcagtcctgc agtccctatt cattanttaa atgtatttaa ctggtaaagt ccctnccnc 480  
 cataatgaaa taganccttt ttgaaaaccc aaaaaaaaaa aaaaaagtcc 540  
 ctgcccggcc ggccctcaaa nggngaattc canncctgg gggccgtact aanggatccn 600  
 cccggnccaa cttggggaat atgggntant gn 632

<210> 500  
 <211> 619  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature  
 <222> (1)... (619)  
 <223> n = A,T,C or G

<400> 500  
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 atctcaagan gacctgggag aagcttctgc tggcagctcg tgcaattggt gccattgaaa 120  
 accctgctga tgtcagtgtt atatcctcca ngaatactgg ccaaanggct gtgctgaant 180  
 ttgctgctgc actggaacca ctccaattgc tggccgcttc actcctggaa ccttcaactaa 240  
 ccagatcagg caaccttccg ggaccacggn ttnttggtgt tactgacccc aaggctgacc 300  
 accaacctnt cacggaggca ttttatgtta acctacctac cattgcgctg tgtaacacaa 360  
 gattcttctc tgccatgttg gacattggca ttccatgcaa caaccaaggg gagctcactc 420  
 aatgggtttg atgtgggtga tctgctcggg naagtctgcg catgcctggc accatttccg 480  
 tgaacaccat ggagggatgc ctgattttac cttggccgga cacnctangg cgaattcacc 540  
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 gggaaatgat ccttccaan 619

<210> 501  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc\_feature  
 <222> (1)... (605)  
 <223> n = A,T,C or G

<400> 501  
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 ctttgaagaa agcaaacatt ggggttgcta tggggattgc tggctcagat gtgtccaagc 180  
 aagctgctga catgattctt ctggatgaca actttgcctc aattgtgact ggagtagagg 240  
 aaggctgtct gatctttgat aacttgaaaa aatccattgc ttatacctta accagtaaca 300  
 ttccccgaga tcaccccggt cctgatattt attattgcaa acattccact accactgggg 360

actgtcacca	tcctctgcat	tgacttgggc	actgacatgg	gtncctgccat	ctcctggcctt	420
atgagcaggc	tggagggcat	catgaanaaa	cagcccaaaa	tccaaacaga	caacttgtga	480
atgancnggt	gatcacatgg	ctatggcaga	atggatgatc	nagnctctgg	aggctcttac	540
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cctga						605

<210> 502  
 <211> 627  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(627)  
 <223> n = A,T,C or G

<400> 502						
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acttgctggg	tttatcattc	tgagggctga	aaactttctc	acaaagtctc	agtcaggctt	180
cttgcccttag	ctgttgtaaa	taggctctca	tcacttcac	ttctgtttgt	ttgcagggtt	240
ggcataaatt	gcgttaagt	gaaaaccagg	ctctccagga	atgggaaaat	taagtgttc	300
ccagcgtata	catttctttc	tcaccttggc	ttttggaatt	gcacttttgc	agtttcttca	360
nacattcaga	aatgtagaga	gttatatata	tcaangnct	atcaacttca	ttcttaattt	420
cataagtttt	gaaaaaaaca	ttggcccttg	aagtaataaa	tngntttatt	cccaaaatct	480
ggatcntttg	gcnctctnng	ggcangnccc	ttgaaatgac	ttttgatagg	gaacaangcc	540
ctgggtttcca	nnagnttggg	ttcnggaccn	taaaaaaaaa	gggaanccgg	nttttgngg	600
gcccggttta	acccaagggc	cggancn				627

<210> 503  
 <211> 629  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(629)  
 <223> n = A,T,C or G

<400> 503						
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aatagcgtca	gagacatttt	tcacgttgcc	accttggcat	gtgtaataaa	gacaaataaa	180
aacgttaagc	ggaacaaatc	acagagagcc	acaaagcgga	tttcacacat	gcctagcaga	240
ccagaactct	cggcagttgc	tacggactta	cgaaaggaca	aagcgaagag	ctgcactgtg	300
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aacaaaaagg	tgaagtctaa	atgaagtgc	cagccaaagt	catgtatcca	gaggcttang	420
aggcgtttga	gangatactc	atctttttgg	aatnctgcct	taggttcggc	atgtanacca	480
agtgatgaga	agtgaatcca	tggaaagagtt	ttaatgtgac	ttggaaaata	tgccaaaaaa	540
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ggggaattca	aacactnngg	gcggtatan				629

<210> 504

<211> 462  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(462)  
 <223> n = A,T,C or G

<400> 504

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ctattttggt	ggtttttcgga	actgaggcca	tgattaagag	ggacggcccg	gggcattcgt	180
attgcgccgc	tagagggttaa	attccttgac	cggcgcaaga	cggaccagag	cgaaagcatt	240
tgccaagaat	gttttcatta	atcaagaacg	aaagtcggag	gttcgaagac	gatcagatac	300
cgtcgtagtt	ccgaccataa	acgatgcccg	accggcgatg	cggcggcggt	attccatgac	360
ccgncgggca	gcttcgggga	aaccaaagtc	tttgggttcc	ngggggagta	tnggtgcaaa	420
aaaaaaaaaa	aaaaaaaaaa	gtcctnggnc	gcgacccctt	aa		462

<210> 505  
 <211> 628  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(628)  
 <223> n = A,T,C or G

<400> 505

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ctgaggcatg	ggggtcaggg	gttgaggtct	tggtgagtgt	tttagtgggg	ttagcgatgg	180
aggtaggatt	ggtgctgtgg	gtgaaagant	atgatggggg	ggtggttggt	gtaaacttta	240
atagtgtagg	aagctgaata	atztatgaag	gagaggggtc	agggttgatt	cgggaggatc	300
ctattgggtgc	gggggctttg	tatgattatg	ggcgttgatt	agtantaatt	actggttgaa	360
cattgtttgt	tggtgtatat	attgnaattg	agattgctcg	ggggaatang	ttatgtgatt	420
aggaataggg	ttangatgag	tgggaagaaa	aaaagaaaag	aantaaaagt	tttaattattc	480
ccttttttgg	ttgaagngat	natggaaggg	gaaaatttgg	gccttgaaat	tgtttaagta	540
atacttttct	aataaggtaa	gtctagaaga	atagggcngg	ttttggtctt	aaaaaggcta	600
aaaggggatt	ggcgggggtg	atccnccc				628

<210> 506  
 <211> 612  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(612)  
 <223> n = A,T,C or G

<400> 506

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cgtagctggg	tttggTTtaa	tccacctcaa	ctgcctgcta	tgatggataa	gattgagaga	120
gtggggagaa	ggcttacgtt	cagtgaaggga	gagatttggT	atatgattga	gatgggggct	180
agTTTTgtc	atgtgagaag	aagcaggccg	gatgtcagag	gggtgccttg	ggtaacctct	240
gggactcaga	agtgaagg	ggctattcct	agTTTTattg	ctatagccat	tatgattatt	300
aatgatgagt	attgattggT	agtattggTt	atggTtcatt	gccggagaag	tatattgttg	360
aagaggatag	ctattagaag	gattatggat	gccgttgctt	gcctgaagaa	atacttgatg	420
gcagcttctg	tggaaccaag	gtttattttt	ttggntagaa	ctggaataaa	acctacatgt	480
ttatttctan	gccactcagg	taaaaaatca	tgchnaactta	acccttgata	atgtgcctcc	540
aaaatgtaaa	aaaataacgg	ttggccccggg	ataatcccgt	ncttggccga	ccccctaggT	600
aattcccccc	tg					612

&lt;210&gt; 507

&lt;211&gt; 632

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(632)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 507

ggtactacgt	tgtagccac	ttccactatg	tctatcaat	aggagctgta	tttgccatca	60
taggaggctt	cattcactga	tttccccat	tctcaggcta	caccctagac	caaacctacg	120
ccaaaatcca	tttccactatc	atattcatcg	gcgtaaatct	aactttcttc	ccacaacact	180
ttctcgccct	atccggaatg	ccccgacgtt	actcggaata	ccccgatgca	tacaccacat	240
gaaacatcct	atcatctgta	ggctcattca	tttctctaac	agcagtaata	ttaataattt	300
tcatgatttg	agaagccttc	gcttcgaagc	gaaaagtcct	aatagtagaa	gaacctcca	360
taaacctgga	gtgactatat	ggatgcccc	caccctacca	cacattcgaa	gaacctcgat	420
acataaaatc	tagacaaaaa	aggaaggaat	cgaaccccc	aaactgggtt	nagccaaccc	480
catgggcttc	acgacttttt	tataaaaaaa	aaaaaaaaaa	aaaagtcctg	gccccggngg	540
cggtcanggn	gaaattcaac	nactggngng	cggctctaang	ggtccaactc	gggnccaacc	600
tgggggaaaa	tgggaaagtg	gttctctggg	aa			632

&lt;210&gt; 508

&lt;211&gt; 336

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(336)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 508

cggtcctcta	atgctgctcn	cccggccgca	ntgtgattgg	atatcttgca	gaattcgccc	60
ttagcgtggT	cgccggggccg	aggtacaact	tccaaaaagg	agacattgga	gaanaaccaa	120
gctgggtcta	taaggaattg	cacatgagat	ggcacacata	tttatgctgt	ctgaaggTca	180
cgatcatgtt	accatatcaa	gctgaaaatg	tcaccactat	ctggagattt	cgaccgtgtt	240
ttcctctctg	aatctgttat	gaacacnttg	gttggctgga	ttcantaata	aatatgtaag	300
gcctttcttt	tcaaaaaaaa	aaaaaaaaaa	aaaagt			336

<210> 509  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(624)  
 <223> n = A,T,C or G

<400> 509  
 ggtacttttt tttttttttt ttttttttta tagatacaat tggctttttat ttgtgattca 60  
 tgagtcaggg cagtttccat tctgcaaaat atagtgatag ctctacttgg gcaatacaac 120  
 agtanaacag tgggttttgt aaaatgggaa tccaggaaca gaagaatata aataaattga 180  
 tttaaataaa ctgattgggt aatttcagaa tacttcatat tacttttttc taagagttaa 240  
 agcagaaagg actttcttac tgtgtgact canacagcct ggactctcat gtttttagga 300  
 aaattttgct gttctgggat ctacctgctt cctcatgttt cagtgnagat atatggcatt 360  
 taacatgact ggctccattc tggagtccca ggctgtccct aaatgagaag ttgactaaac 420  
 ataaggnatt aacactactg ncaggtacca tcattttggc ttncatcatt catanggtat 480  
 gatgnccnc naatcatacc tttatttgag tttttgncat tccnncccaa aaaaaaatt 540  
 ttgaanttta ccaaaggntg catgccacnt ttaaagggtt anaaaatcnc ccnccnggn 600  
 actaatnttg ggccatcngn nggc 624

<210> 510  
 <211> 619  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(619)  
 <223> n = A,T,C or G

<400> 510  
 acggatgcta cttgtccaat gatggtaaaa gggtagctta ctgggtgtcc tccgattcag 60  
 gttagaatga ggaggtctgc ggctaggagt caataaagtg attggcttag tgggcgaaat 120  
 attatgcttt gttgtttgga tatatggagg atggggatta ttgctaggat gaggatggat 180  
 agtaataggg caaggacgcc tcctagtgtg ttagggacgg atcggagaat tgtgtaggcc 240  
 aataggaaat atcattcggt cttgatgtgg ggaggggtgt ttaanggggt ggctagggtta 300  
 taattgtctg ggccccctaa gaggtctggt gagaatagt ttaatgtcat taangagaga 360  
 aagaaaaaaa ataagccga gggcgctctt gattgtgtan taaaggtgga angtgatttt 420  
 atcngaattg gaagtgattn ctaaggggtt ggtttgatcc ctttcgtgcc aaaataagaa 480  
 gnggaatgct gctagggctc cataatgaag gcaanataaa atgaaagnaa aaaatctgta 540  
 aggnnggact gctactaata ncctcccaaa tcttgaacaa gntttnccaa ttntggatgg 600  
 nggtataant tnaattcnn 619

<210> 511  
 <211> 634  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;222&gt; (1)...(634)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 511

cgaggacg	g	g	g	a	g	a	t	g	g	c	ctagaagcaa	t	g	a	t	a	g	c	c	a	c	t	g	a	g	a	a	c	acctagcacc	60					
caatcttg	g	t	c	t	a	a	t	a	c	c	attctcccat	c	a	a	a	g	g	a	a	c	c	agagatcctt	g	g	a	g	a	a	a	t	g	120			
ttaaggaat	g	a	g	c	a	g	a	a	a	t	t	a	c	a	a	g	a	t	a	a	a	catcttatag	c	t	c	t	a	g	a	a	a	180			
taagaaag	t	a	c	t	g	c	c	t	a	t	t	t	a	g	a	a	t	c	c	t	a	t	c	a	t	t	g	t	a	a	a	t	240		
attatttta	a	g	t	g	c	c	a	c	a	g	t	a	t	t	t	t	c	a	t	t	t	c	a	a	g	a	t	g	c	g	a	a	300		
cacaatctt	g	t	t	c	t	a	a	t	a	c	t	g	t	c	c	a	g	t	g	g	a	t	a	t	c	a	a	t	t	c	c	a	360		
aatgatgata	c	c	c	g	t	t	c	c	c	t	t	t	a	a	t	g	a	a	a	c	a	a	a	a	a	a	a	a	a	a	a	a	420		
tgngaggnga	t	c	c	a	a	t	t	c	a	a	g	c	a	t	a	t	c	t	g	g	n	t	a	c	t	t	c	c	a	a	a	a	480		
gaaccttcg	t	a	a	a	a	g	a	a	c	t	g	g	c	t	a	a	t	t	a	a	n	c	c	t	t	a	a	n	c	c	c	t	t	540	
tcattggcag	a	n	a	n	c	c	t	g	c	a	t	t	a	a	n	t	n	t	a	a	g	g	g	t	t	g	n	n	t	n	c	c	n	c	600
gtttgnaggc	a	a	a	a	a	a	c	c	g	g	t	c	t	t	g	g	c	a	t	t	a	n	c										634		

&lt;210&gt; 512

&lt;211&gt; 623

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(623)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 512

ggtacgcggg	c	a	t	t	g	t	t	c	a	t	g	a	a	a	c	t	t	a	a	c	a	a	g	a	a	a	c	t	t	a	a	c	60	
tggataagtg	c	t	a	t	g	t	g	a	t	c	c	t	t	g	a	a	c	a	c	a	c	c	t	t	g	c	c	c	c	a	a	a	c	120
tggagttact	t	a	t	t	a	a	c	a	t	c	a	a	g	g	c	t	g	g	a	a	c	c	t	a	t	t	t	g	c	c	a	t	180	
agcacatggg	t	a	t	t	a	c	t	g	a	t	c	g	c	a	t	t	g	a	a	a	a	c	a	c	a	c	a	t	t	c	c	t	240	
gactgtgtca	t	g	a	c	a	a	g	g	a	a	a	c	t	t	a	c	a	a	a	c	t	g	c	a	c	a	g	a	a	a	a	a	c	300
agaaacgtga	a	g	c	c	a	g	c	a	a	t	t	g	t	t	t	c	g	c	a	a	t	t	t	c	g	c	a	a	a	a	a	a	c	360
aaactttaat	t	g	t	c	t	t	g	a	a	c	a	a	a	a	c	a	t	t	a	t	g	a	a	a	a	a	a	a	a	a	a	a	c	420
cataccccc	c	c	t	t	t	a	c	a	t	t	t	g	n	g	c	a	g	n	g	a	t	t	t	t	t	t	t	t	t	t	t	t	c	480
agcaacangg	n	t	t	t	a	c	t	a	t	c	t	t	t	c	a	t	t	t	c	a	a	a	a	a	a	a	a	a	a	a	a	a	a	540
aaaaaaaaaa	a	a	a	a	a	a	t	a	c	c	t	n	c	c	c	g	g	c	g	g	c	g	g	c	g	c	c	a	a	a	a	a	a	600
cgtctttggg	a	c	c	a	a	c	n	c	g	g	g	c	c	c	a	a	a	g	g	a	a	t	t	c	a	a	n	c	a	a	c	c	c	623

&lt;210&gt; 513

&lt;211&gt; 623

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(623)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 513

actgccctct	c	c	a	g	a	t	c	a	g	c	a	g	a	g	a	g	a	g	a	g	a	c	a	a	a	c	a	c	a	a	a	a	60	
cttattgggtg	c	c	a	t	c	a	t	c	g	t	g	a	t	t	g	t	c	a	g	c	a	a	t	t	c	t	t	c	c	t	g	g	c	120
ctacaaaagt	c	c	g	t	c	c	t	g	g	c	a	g	c	t	t	t	a	g	c	a	a	a	a	a	a	a	a	a	a	a	a	a	a	180

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tttgctgaaa taggcagatt gtggcgaaa gacaaatatg attgtttaat ttggatcatg      240
accttcacatc tcaccattgt cctgggactc ggggttaggcc tggcagctag tgtggcattt      300
caactgctaa ccatcgtgtt caggacccaa ttcccaaat gcagcacgct ggctaataatt      360
ggaagaacca acatctataa gaataaaaaa gattattatg atatgtatga gccagaagga      420
gtgaaaattt cagatgtcca tcttctatct accttgcnaa cattggnttc tttaggcngg      480
aacttatcga tgctggtnng ctttagtnca ctttgnaatt tacgcaagcc ccacaaactt      540
tgaggaaatc ccaaactgcn aancangntt nttcagtggg acccaanggt tttttttcct      600
tggcccgacn ccctangna atn                                           623

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<210> 514
<211> 627
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(627)
<223> n = A,T,C or G

```

```

<400> 514
ggtactcatg cccgactgtc taccaggcac acagactttg aggagagggc gtatgtcgtc      60
ttgatccgca tcaatgatgg gggtcggcca cccttggaag gcattgtttc tttaccagtt      120
acattctgca gttgtgtgga aggaagtgtt ttccggccag caggtcacca gactgggata      180
cccactgtgg gcatggcagt tggataactg ctgaccaccc ttctgggtgat tggataaatt      240
ttagcagttg tgtttatccg cataaagaag gataaaggca aagataatgt tgaaagtgtc      300
caagcatctg aagtcaaacc tctgagaagc tgaatttgaa aaggaatgtt tgaatttata      360
tagcaagtgc tatttcagca acaaccatct catcctatta cttttcatct aacgtgcatt      420
ataatttttt aaacagatat tccctcttgt cctttaatat ttgctaaata tttctttttt      480
gangnggagt cttgctctgt cgnccaagct ggantacctg ncccggccgg ccgtcaaagg      540
cgaattcaac aactggcggc cgtactaatg gatcgacctc ggaccaactt ggggaacatg      600
gcanactngt tcttgngnaa aggatcc                                           627

```

```

<210> 515
<211> 605
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(605)
<223> n = A,T,C or G

```

```

<400> 515
accattggtg gccaatgtat ttgatggtaa gggaggggac gttgacctcg tctgttatgt      60
aaaggatgcc gtanggatgg gagggcgatg aggactagga tgatggcggg caggatagtt      120
cagacggttt ctatttcctg agcgtctgag atgttagtat tagttaagtt ttgttgtgag      180
tgtaggaaa agggcataca ggactaggaa gcagataagg aaaatgatta tgagggcgtt      240
gatcatgaaa ggtgataagc tcttctatga taggggaaag taancgtctt gtanacctac      300
ttgcgctgca tgtgccatcc cgccgtaccc taaccctgtc aaaggtagca taatcacttg      360
ttccttaatt aagggaacctg tatgaatggc ttcaccaggg ttcaactgtc tcttactttt      420
aaccagtga aattgacctgc ccctgaanag gcggcnttac acaccagacg agaaaacctt      480
tggagcttaa ttattatcca acatacctng ccggaccccc taaggcgaat tccaccactt      540
gcggcgctcta tggatccact cggaccactt ggggaaaagg ctactgtcct ggnaatgttt      600

```



cctcn

605

<210> 516  
 <211> 464  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(464)  
 <223> n = A,T,C or G

<400> 516  
 ggtacaacta atccgtgaca aattaccaga ttaattttac tttatttctt caggcctggg 60  
 gtttttcgat gagttcaaat ttgggatctt caaatttgaa ggtgggaaat gtattcatgt 120  
 ctgcattacc aaacatttgc ttgagcttaa aaagctccct ctccagctct tgctgatact 180  
 ctgaactagc atcaacaggt cctccagatg tctgtcgctt agatttgat tctctaactt 240  
 tgtccacaaa gagtttctgt ataggatcaa gtctcttatt aaatgccact gctgtaacac 300  
 caatgttcct ccgcaaatgg actgagacgg ctgaccgaat gacagaggag aacctgaaga 360  
 gcctctgaag aatcatgctg attcttgac tcagtcccga gctgncaaag ccttcgccgc 420  
 caccaccttc gntctacccc cgcgtacctg cccggcgggc gctc 464

<210> 517  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 517  
 acccgagca cggagatctc gccggcttta cgttcacctc ggtgtctgca gcaccctccg 60  
 ctctctctcc taggcgacga gacccagtgg ctagaagtcc accatgtcta ttctcaagat 120  
 ccattgccagg gagatctttg actctcgag gaatcccact gttgaggttg atctcttcac 180  
 ctcaaaagggt ctcttcagag ctgctgtgcc cagtgggtgt tcaactggta tctatgaggc 240  
 cctagagctc cgggacaatg ataagactcg ctatatgggg aagggtgtct caaaggctgt 300  
 tgagcacatc aataaaaacta ttgcgcctgc cctgggttagc aagaaactga acgtcacaga 360  
 acaagagaag attgacaaac tgatgatcga gatggatgga acagaaaata aatctaagtt 420  
 tgggtgcgaac gccattctgg ggggtgtcctt tgccgtctgc naaactgggt ccggttgagaa 480  
 ggggggtccc tgctcttggc cggacacnct aaggcgaatt ccacacactg cggccgtact 540  
 atggatcgac tcggnaccaa cttgggtaat atgggcatac tggtnctggn gaaatgtttc 600  
 cctccaatcc a 611

<210> 518  
 <211> 435  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(435)

<223> n = A,T,C or G

<400> 518

cgagggtactt	tntttttttt	tttttttttt	ttttaagagg	aaaacccggt	aatgatgtcg	60
ggggttgagg	ataggaggag	aatgggggat	aggtgtatga	acatgagggt	gttttctcgt	120
gtgaatgagg	gttttatgtt	gttaatgtgg	tgggtgagtg	agccccattg	tgttggtgga	180
aatatgtaga	gggagtatag	ggctgtgact	agtatgttga	gtcctgtaag	taggagagtg	240
atatttgatc	aggagaacgt	ggttactagc	acagagagtt	ctcccagtag	gttaatagtg	300
gggggtaagg	cgaggtttagc	gaggcttgct	agaagtcac	aaaaagctat	tagtgggagt	360
agagtttgaa	gtccttgaaa	gaggattatg	atgccactgt	gaatgccttc	ctagtgtgag	420
tttgctagcc	cgcg					435

<210> 519

<211> 407

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(407)

<223> n = A,T,C or G

<400> 519

actttntttt	tttttttttt	tttttttttt	ncagctttgc	aaccatactc	cccccggaac	60
ccaaagactt	tggtttcccg	gaagctgccc	ggcgggtcat	gggaataacg	ccgccgcac	120
gccggtcggc	atcgtttatg	gtcgggaacta	cnacggtntn	tgatcgtntt	cnaacctccg	180
actttcgttc	ttgattaatg	aaaacattct	tggcaaatgc	tttcgctctg	gtccgntttg	240
cgccggtcca	anaatttcac	ctctagcggc	gcaatacnaa	tgcccccggc	cgteccctct	300
aatcatggcc	tcagttccga	aaaccaacaa	aataaaaaccg	cggtcctatt	ccattatgcc	360
tagctgcggg	atccaggcgg	tccccggtac	ctnggccgng	accacgc		407

<210> 520

<211> 613

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(613)

<223> n = A,T,C or G

<400> 520

accttctggg	gcatacaaca	tggcagcagg	gcctcgggaa	gaggggtagg	aggaccgagc	60
agcattctct	gtagaggaag	acaggaaagg	agaccctctt	ggcacacatt	tatggagggg	120
tgtccctgaa	gagaagggca	ggtgggagag	gttccctggt	acttaagaga	aggcaccagt	180
ggcaaagagc	acaatgaaga	ggatgatgat	aaaaacaatc	acgcagataa	ggacaatcat	240
cttcacgttc	ttccaccaga	attttcgagc	caccttctgc	gatgtcgtct	tgaagtgtct	300
agatgtggct	tccagatcct	ctgtcttggt	gcggagatgt	tccaagtttt	ccccccgggc	360
caggatccgc	tccacattct	gggtcataat	attcttaact	ccctccacct	cactttgcag	420
gttcgcgaca	cgatcatttc	cttcaccttc	actggcttnc	tncatgtctc	aaagcaccca	480
gccggcagta	agtgaatcgc	ctatcggntt	cttccaggng	ggcctanttn	anttctgggt	540
gtcaactttc	ccgcgctact	tgggcgggacc	ccctaagggg	aattcactgg	cggccgtctt	600
tggatccacc	cgn					613

<210> 521  
 <211> 606  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(606)  
 <223> n = A,T,C or G

<400> 521  
 actgcagtaa aagctttaac aggtggaatt gccacttat tcaaacagaa taagggtggt 60  
 catgtcaatg gatatggaaa gataactggc aaaaatcaag tcaactgctac gaaagctgat 120  
 ggcggcactc aggttattga tacaaagaac attcttatag ccacgggttc agaagttact 180  
 ccttttctctg gaatcacgat agatgaagat acaatagtgt catctacagg tgctttatct 240  
 ttaaaaaaag ttccagaaaa gatggttggt attggtgcag gagtaatagg tgtagaattg 300  
 gggttcagttt ggcaaaagact tgggtgcagat gtgacagcag ttgaattttt angtcatgta 360  
 ggtggagttg gaattgatat ggagatatct aaaaactttc aacgcatacct tcaaaaacag 420  
 ggggtttaaat ttaattgaa tacaanggta ctggtgctcc aagaagcana tggaaaaatt 480  
 gatgttctat tgaantctct ttgnnggaaa gctgaantnt acttggatgn cctnggccgn 540  
 acnncntagc caatcnccea ctggngccnt ntttggtecn cctggtccaa ctgggnnann 600  
 nggctn 606

<210> 522  
 <211> 617  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(617)  
 <223> n = A,T,C or G

<400> 522  
 acttgcgctt actttgtagc cttcatcagg gtttgctgaa gatggcggtg tataggctga 60  
 gcaagaggtg gtgaggttga tcgggggtta tcgattacag aacaggctcc tctagaggga 120  
 tatgaagcac cgccagggtc tttgagtttt aagctgtggc tcgtagtggt ctggcgagca 180  
 gttttgttga tttaactggt gaggtttagg gctaagcata gtgggggtatc taatcccagt 240  
 ttgggtctta gctattgtgt gttcagatat gttaaagcca ctttcgtagt ctattttgtg 300  
 tcaactggag ttttttacia ctcangtgag ttttagcttt attggggagg ggggtgatcta 360  
 aaacactctt tacgccggct tctattgact tgggttaatc gtgtgaccgc cgggtggctgg 420  
 cacgaaattg accaaccctg gggtttagtat aacttaatta aactttcntt attgctnaag 480  
 gtaatcctgg tgggtncctt gggggngtng ntaggctaaa cgtttgaacc tcattctgcg 540  
 gcctganctt ggccctttta tcgggggatt aaaaggggac tncttgaacn gggngcttct 600  
 tggnaaatta taaaaca 617

<210> 523  
 <211> 608  
 <212> DNA  
 <213> Homo sapiens

<220>

<221> misc\_feature  
 <222> (1)...(608)  
 <223> n = A,T,C or G

<400> 523

cgaggtactt	tttttttttt	tttttttttt	ttttggaana	agtaagcctt	tatttccttg	60
ttttgcaaat	aaaactggct	aagttgggtg	ctttttgggtg	attaagtcaa	aganaccaaa	120
tcccatatcc	tcgtccgact	cctccgactc	tcccttggct	tcaaccttan	ctggggctgc	180
agcagcagca	ggagcagctg	tggtgggtagc	aaccacaggg	gcagcancca	caaaggcaga	240
tggatcaacc	aanaaggcct	tgaccttttc	aacaagtggg	aaggngtaat	ccgtctccca	300
aacaaagtca	ggactcgttt	gtctcttcaa	aaaaaaaaag	cganggctcg	catttggtcc	360
cctttggaca	ttttgcaact	cttcaatggg	gttncattgg	tnggtgatgg	tataaacctt	420
tgangnaccc	gcccggccgg	ccgtcaaang	gcaaattcac	ccactggcgg	ccgttctatg	480
gatccnacct	ggncccaact	tgggtaatat	ggcanactgt	tccctggggga	aatgtntccc	540
tnaaattccc	acaaanacaa	nccgaaccta	aangtaancn	gggggccaag	agggcnaccn	600
ccttattg						608

<210> 524  
 <211> 398  
 <212> DNA  
 <213> Homo sapiens

<400> 524

ggtacaggat	cctctaaaga	gaccgcctgg	ctgggtgctc	aaaccacatg	ggccgaccca	60
aaagacgtca	aaaccaagag	ctgctcagga	ggcactaaat	gttgacggtc	ttggccggct	120
tcacatcctc	aatttcagca	gacagccagc	ggtaagtgcg	atgacgccgc	agcacctcaa	180
tggccttgag	ttccagtgg	gttgccctgaa	taccaaggtc	ttctaagcca	ggcaggtgag	240
gcaatttcat	gtctgtgatg	tgcacccgct	ccactttatc	ccttggtatc	caagggtcaa	300
atgggcttat	ttcaaagact	cttgctaccc	atcgataggc	aaaaagcggc	aagggggaatg	360
ggaggaacaa	tctgtgagcc	acaacaaaga	tgtacctg			398

<210> 525  
 <211> 607  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(607)  
 <223> n = A,T,C or G

<400> 525

actgttcttg	ttggccccgag	tggagactgg	tgttctcaaa	cccggtatgg	tggtcacctt	60
tgctccagtc	aacgttacaa	cggaagtata	atctgtcgaa	atgcaccatg	aagctttgag	120
tgaagctctt	cctggggaca	atgtgggctt	caatgtcaag	aatgtgtctg	tcaaggatgt	180
tcgtcgtggc	aaccgttgct	ggtgacagca	aaaatgaccc	accaatggaa	gcagctggct	240
tcaactgctca	ggtgattatc	ctgaaccatc	caggccaaat	aagcgccggc	tatgccccctg	300
tattggattg	ccacacggct	cacattgcat	gcaagtttgc	tgagctgaag	gaaaagattg	360
atcgccgttc	tggtaaaaag	ctggaaaaatg	gccctaaatt	cttgaaatct	ggtgatgctg	420
ccattgggtga	tatgggtcct	ggcaagccca	tgtgtgtttg	agagcttctc	aaactattca	480
ccttgggtcc	tttgcgtgcg	tgatatgaaa	aaacagtgcg	ggggtgtatc	aaacatggac	540
aaaagnttnt	tgacttgcag	gtaccaattt	nccaaaacta	aaaggtnaan	aaatttncca	600
aaccgcc						607

<210> 526  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(624)  
 <223> n = A,T,C or G

<400> 526

cgagggtacgc	ggggggaagct	ctgtttggtg	ctttggatcc	atttccatcg	gtccttacag	60
ccgctcgctca	gactccagca	gccaaagatgg	tgaagcagat	cgagagcaag	actgcttttc	120
aggaagcctt	ggacgctgca	ggtgataaac	ttgtagtagt	tgacttctca	gccacgtggt	180
gtgggccttg	caaaatgatc	aagcctttct	ttcattccct	ctctgaaaag	tattccaacg	240
tgatattcct	tgaagtagat	gtggatgact	gtcaggatgt	tgcttcagag	tgtgaagtca	300
aatgcatgcc	aacattccag	ttttttaaga	agggacaaaa	ggtgggtgaa	tttctggag	360
ccaataagga	aaagcttgaa	gccaccatta	atgaattagt	ctaatacatgt	tttctgaaaa	420
tataaccagc	ccattggcta	tttaaaactt	gtaatttttt	taatttacca	aaatntaaaa	480
tntgaagacn	taaccagtt	gncatctgcg	tgacaatnaa	acattaatgc	tacactttta	540
aaaaaaaaaa	aaaaaaaaaa	gtcctgccng	cggccctcaa	aggggaattc	cacacctggg	600
ggccgtcttt	nggnccacc	cgnn				624

<210> 527  
 <211> 611  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(611)  
 <223> n = A,T,C or G

<400> 527

acagagtgc	actgaacaga	tcacaaagca	cgagaaacat	tagttctctc	cctccccagc	60
gtctccttcg	tctccctggg	tttccgatgt	ccacagagt	agattgtccc	taagtaactg	120
catgatcaga	gtgctgtctt	tataagactc	ttcattcagc	gtatccaatt	cagcaattgc	180
ttcatcaaat	gccgtttttg	ccaggctaca	ggccttttca	ggagagttta	gaatctcata	240
gtaaaagact	gagaaattta	gtgccagacc	aagacgaatt	gggtgtgtag	gctgcatttc	300
tttcttacta	atttcaaatg	cttcctggta	agcctgctgg	gagttcgaca	cagtgggttg	360
tttggtgtct	cagatgccac	ttcagaaaaga	tcctaaaata	atctcctttc	attttcaagt	420
agaacacctt	actttctggg	tgtgtagcat	tgggaataaa	atatttgtcc	acagcttcag	480
aacatcattg	cagatgtcct	gcagtctggc	tntatctttt	acggnacctc	ggccgggaca	540
ccctangggc	aattccacac	ctggcgggcg	tctantggac	ngctnggcca	cttgggnana	600
tggtactgt	t					611

<210> 528  
 <211> 615  
 <212> DNA  
 <213> Homo sapiens

<220>

<221> misc\_feature  
 <222> (1)...(615)  
 <223> n = A,T,C or G

<400> 528  
 ggtactttttt tttttttttt ttttttttga gacggagtct tgttcagctg cccaggctgg 60  
 agtgcagtggt ctcgatcttc gctcactgca accaccgtct cctgggttca agcgattctc 120  
 ctgtctcagc ctcccaagta gctgggatta caggccacca ccatcatgcc cggctaattt 180  
 ttgtatattg gtagagacgg agtttcacta tgttgggcag gctgggtctg aactcctcac 240  
 ctcaggtgat cgcgccgtct tggcctccca aagtgtctagg attacaggcg taagccacca 300  
 tgccctggcca gatgatgtat ttaaatatca taccaaactc tgtgtattta tataaagaaa 360  
 gactggtaaa agacttcctn attttaaaaa aaacccaaaac ccaaaccaaa aaaaacttta 420  
 cccttaccat tgntgcatat tgtgcagtat aaaacacaca cttattngga catganaaaa 480  
 ccgnaagaaa gncccgggta aactggactt tgccgccttt aaaaataaaa tcnataaagn 540  
 gccttgaggc cctttttcaa tgcaattttt taaccgggac ctgccnggng gcggtaaggg 600  
 naatccanctn ctggn 615

<210> 529  
 <211> 352  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(352)  
 <223> n = A,T,C or G

<400> 529  
 cgaggctactt tntttttttt tttttttttt tttttgggaa aagtcatgga ggccatgggg 60  
 ttggcttgaa accagctttg ggggggttca ttccttctt tttgtctan attttatgta 120  
 tacgggttct tcgaatgtgt ggtaggggtg ggggcatcca tatagtcact ccaggtttat 180  
 ggaggggttct tctactatta ggacttttctg cttcgaagcg aaggcttctc aaatcatgaa 240  
 aattattaat attactgctg ttagagaaat gaatgagcct acagatgata ggatgtttca 300  
 tgtgggtgat gcatcgggggt agtccgagta acgtcggggc attccccgcg gt 352

<210> 530  
 <211> 769  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(769)  
 <223> n = A,T,C or G

<400> 530  
 ggtactgcat agattaaaga aataaactgc agtaaagcca ctcgtaagga atgaacgcca 60  
 ttgccaatga taatcctctg cacatagggtg gaaatagcaa agaagtatag ttgcttcaga 120  
 acaggtaata accaaaatga taaacaccag aaataggaag ccaaaccatgt aatacatctg 180  
 gtgtgaccaaa atactattca gaatgaagaa aagttgtata aagatgcagc caaagggcaa 240  
 aatccctccc atgataatac caggcaagggt cttcgtgtag aacgactgtt cagggaatctg 300  
 acngtggaat ctgattggtt cgaactgggt gttcaatggc atcttcttaa aaccaangta 360  
 tgcaccaata aacgtcnnag gcacagatat gtanacaaaa gggccaatat ggcaancagt 420

gtccccaaaa	gaaataactgt	tgganatacct	ctncccagag	gtcagattnt	tattaagaat	480
cnccccgcgt	ctttttttttg	ttttttttttt	gtcccaacttt	nnggtaaaann	acntttnttt	540
aaaaatgttt	aantctanttt	cctaattccc	atnttctttt	gtcnennnn	tgctggnggn	600
ctttaaggga	antcncnnt	ggnggcgten	atganccact	tgnnactggg	tantagcnac	660
gttcggggang	ttcccnctt	ctaataatccg	gnagtaann	ggctttgncn	cctantggnn	720
cnctttttcg	aacntgcctn	anannntccg	gaggtgtatn	ttcttctnn		769

&lt;210&gt; 531

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(777)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 531

cgaggtaactt	ttttttttttt	ttttttttttt	tgttttttttt	ttttttttctt	cagctaaaaac	60
agcggaagag	gtgattttatt	atatggttgt	tacactcggc	cacaaataaa	cacagaaata	120
gtccanaatg	tcacagggtcc	aggacagagg	accaacatgg	gcatttttgt	tatgagcaag	180
gtgggtctna	naggtgatcg	gcgatcagag	ggcgatgaag	ttctagatcc	attgagacaa	240
gctctagaca	gtagcatgca	gtcccacaac	ttgtctccaa	agattcaggt	ttactcacgt	300
catccagcan	agaatggaaa	gtcaaatttc	ctgaattgct	atgtgtctgg	gtttcatcca	360
tccgacattg	aagttgactt	actgaanaat	ggagagagaa	ttgaaaaant	nggacattca	420
taactgnntt	tcancaagga	ctggtctttc	tatctcttgg	ncttnttttt	tcttntattt	480
ttttntaca	tngggcetta	ctttaaaaac	atacntttcc	nmnttacn	tggaatgcaa	540
tngatttcna	nanatttccn	agnggaatcc	tttngttatt	nttaaaaant	gggatctntn	600
gccancactt	ggctaantnt	taccnctttt	nggaatngtc	ntatgntcat	tnttggaat	660
tnccccctn	anngntttct	ttngngngta	aaaattntta	atnnttaaat	tntttttcna	720
anattnttca	aatactaana	ntnntnnggg	nttanannaa	tnntgtanat	gggnng	777

&lt;210&gt; 532

&lt;211&gt; 764

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(764)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 532

actttacaag	atagattgta	taagaagcca	aataatgaaa	gcctagaaaa	aactaattta	60
tacttatctg	aaggttacaa	attagacttt	taaattttct	ttgtagttgg	tggtggttga	120
gggttggtta	gaaatgaaag	cctggatttt	gtgccatggt	tgtaatatag	tttgttcttt	180
gatcaaatat	tcagagaaaa	gaaacttaaa	gatctttgtc	tgtgaagaag	aaaattatct	240
ccctagttca	atctgtagtg	aaataagact	acagaaggca	ttgttttttc	ctttttattt	300
tntgnattat	atatttttct	taaatatgtt	ttattgtctt	ctctaagcaa	aaagttctta	360
ataaacatag	tatttctctc	tgcgtcctat	ttcattagt	aagacatagt	tcacctaaaa	420
tggcatnctg	ctctgaatct	agctttttat	aaatggctat	gtttttgatg	atatgtcaca	480
ttcaaatgg	cctaattaaa	tgtgttaaat	gnaatggcac	tcttataacc	ttaaaaaac	540
canaattaac	cctccaaaaa	aanaaaaaaa	aaaaaggcct	tggccgacnc	ntangngant	600

caccnctgng	gentcatgga	cncttggcca	cttngaann	nggt nangnt	ccggganatt	660
tcccatncc	aattcanccg	acatagnnac	cnggccnaag	ngnnccantg	nngnnnnnct	720
tnnngaacng	gccctnaacn	cccggggngg	tngttcnccc	tcnc		764

<210> 533  
 <211> 773  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(773)  
 <223> n = A,T,C or G

<400> 533						
cgaggtactt	tttttttttt	ttttacagat	acaattggct	tttatttgtg	attcatgagt	60
cagggcagtt	tccattctgc	aaaatatagt	gatagctcct	actgggcaat	acaacagtag	120
aacagtgggt	tttgtaaaat	gggaatccag	gaacagaaga	atataaataa	attgatttaa	180
ataaactgat	tggttaattt	cagaatactt	catattactt	ttttctaaga	gttaaagcag	240
aaaggacttt	cttactgtgc	tgactcagac	agcctggact	ctcatgtttt	taggaaaatt	300
ttgtctgttc	tgggatctac	ctgcttcttc	atgttcagtg	tgagtatatg	gcatttagca	360
tgactgggtc	attctggagt	caccaggctt	gcacctaaat	gagagttagc	taancatagg	420
cnttaacact	actgcagtac	catcatttng	acttcatcat	catanggtat	gatgnctct	480
aatnttncat	tatttgagtt	tggcattcag	ccacgagaga	atattgcctt	tgacaatgnt	540
gcatgcaact	ttaaagggtt	tagatncgcc	nccnggnact	attnngaaa	tcgggggtcc	600
cccnanttgg	agtttnacct	ggcngaccnn	tgacnaccat	taaggantgt	tagantnccc	660
ttgaaccccc	tttacaccnt	ttgnatttcc	cggcntaacc	ccgggcnnta	agggatccnt	720
tggcntnngg	cccngcnatn	gaagnacntt	ngannacgcc	tcncaccan	nng	773

<210> 534  
 <211> 730  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(730)  
 <223> n = A,T,C or G

<400> 534						
acacagacaa	atztatgcga	ccagggcaga	ggctgtagat	gattcatatt	tccaattggg	60
agggaggact	cgcttggtct	tataatatcg	agccaaacgg	tgaatccggc	tctctattag	120
aatcagacgg	aatttagcat	ccttatecct	tctgttcctc	tcaagatgct	ttcgaacagc	180
aactgctttc	ttaattaaat	ggtagagatc	ttcaggaaga	tcaggagcaa	gtccccttaga	240
cttaagaatt	cttaaaaattt	tattgcctgt	cacaaaacgt	acaaattgac	caggctgttg	300
acggctgcct	ccacgtcggt	ggaataattc	tgacgaatct	gggagctcat	ggttggttgg	360
caagaaggag	ctaccacaaa	aacngtgctg	cagggtccaga	agcaggagat	ggccgaaaaa	420
tgtcccgaag	ttcaaccgag	aggaaatcga	ggcgcccgag	cttgaagaag	tcccgaattgt	480
tcgtcaacct	gtgaacagaa	caacccccga	ccgnantgc	ccggtntctg	ccggacacct	540
angggaaatc	accctgnggc	gtctangacc	acttggccaa	ctggganntg	gaaatntccg	600
ggaaagntcn	tcaatcccaa	ttaccgacna	agaactgggc	naagggtcnc	atatgggcnc	660
gccttnnnga	nctnccctta	annccccgga	gggtgntggg	tctcntctan	nntnnngtgg	720
nggnnaanag						730



<210> 535  
 <211> 809  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(809)  
 <223> n = A,T,C or G

<400> 535

gcgtggtcng	cggccgaggt	accaaactgca	gagccaggaa	aactttgaag	ccttcatgaa	60
ggcaatcggg	ctgccggaag	agctcatcca	gaaggggaag	gatgtcaagg	gggtgtcgga	120
aatcgtgcag	aatgggaagc	acttcaagtt	caccatcacc	gctgggtcca	aagtgatcca	180
aaacgaattc	acggtggggg	aggaatgtga	gctggagaca	atgacagggg	ataaagtcaa	240
gacagtgggt	canttgggaag	gtgacaataa	actggtgaca	actttcaaaa	acatcaagtc	300
tgtgaccgaa	ctcaacggng	acataatcac	caataccatg	acattgggtg	acattgtctt	360
caagagaatc	agcangagaa	tttaaacaag	tctgcatttc	atattatttt	antgntgtaa	420
aattaatgta	attaaagtga	actttgttta	aaaaaagann	nntnntntaa	atanaaaaaa	480
gtncctgect	ggcggccggg	caaaggccaa	ttccagcnac	tngnggcent	actagtgatc	540
nactcgtcna	acttgcgtaa	nntggcatac	ttgtntctngg	taaatntatc	cctcncatcn	600
ccaaattcnn	cagagcttaa	atntaaactg	gggcctatag	gnncactcct	tttgggttgc	660
ctgccnttnn	acgaacttcg	ncccttttat	antgcccccc	ganaggggtng	tttggctttc	720
ntnntatatt	ctctctctcc	ttgnngggtt	ttanggtngg	tcatntgggn	tctntanttt	780
agcttnga	ntantngntn	ttntntnt				809

<210> 536  
 <211> 755  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(755)  
 <223> n = A,T,C or G

<400> 536

actttttttt	tttttttttt	tttttttttt	atgaggaaaa	cccggtaatg	atgtcggggg	60
tgagggatag	gaggagaatg	ggggataggt	gtatgaacat	gaggggtgtt	tctcgtgtga	120
atgaggggtt	tatgttggtt	atgtgggtgg	tgagtgaagc	ccattgtgtt	gtggtaaata	180
tgtagagggg	gtatagggct	gtgactagta	tggtgagtcc	tgtaagtagg	agagtgatat	240
ttgatcagga	gaacgtgggt	actagcacag	agagttctcc	cagtaggtta	atagtggggg	300
gtaaggcgag	gttagcgagg	cttgctagaa	gtcatcaaaa	agctattant	gggagtanag	360
tttgaagtcc	ttgagagagg	attatgatgc	nacttgtaat	gcnttcgant	ttgagtttgc	420
tagcngaata	nnatgaggat	gtantccngg	gccaatatna	aaatactccc	cgtnaacttn	480
aggggttnga	taaaatgctg	tctaccnng	actttgccgn	acaccttagg	caattcanca	540
ctggngccgt	ctnanggncc	cacttggnc	acnttggnga	acatggcnnc	ngtcntngga	600
aatgtttcnt	caattccnc	ttcnaccgan	tantgnaacn	ggggcanaag	cncatcatn	660
gtccctccct	tctngaactt	nncnttaaaa	tncccccggg	gggttnatgg	ctttctctnc	720
taanantnt	tnngnggnnt	tcnataanna	taann			755

<210> 537

<211> 794  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(794)  
 <223> n = A,T,C or G

<400> 537

cgaggtacga	aagggacaag	agaaataagg	cctacttcac	aaagcgccctt	cccccgtaaa	60
tgatatcatc	tcaacttagt	attataccca	caccacacca	agaacagggt	ttgttaaaaa	120
aaaaaaaaaa	aaaaaaaaaa	aaaaaagtac	cttgactttg	ttcacagcat	gtaggggtgat	180
gagcactcac	aattgttgac	taaaatgctg	cttttaaaac	ataggaaagt	agaatgggtg	240
agtgc aaatc	catagcaca	gataaattga	gctagttaag	gcaaatacagg	taaaatagtc	300
atgattctat	gtaatgtaaa	ccagaaaaaa	taaatgttca	tgatttcaag	atgttatatt	360
aaagaaaaac	tttaaaaatt	attatatatt	tatagcaaaa	gttatcttaa	atatgaattc	420
tggtgttaatt	taatgctttt	gaatacagag	atntaaatga	agtattatct	gtaaaaatgt	480
atattagagt	tgtgatacag	agtatatattc	attcanccat	nttcatacta	ataatatgga	540
tttaaanata	tcctataaat	tcnaattcaa	nanaaannt	gntananaan	aanggnctgn	600
cggcggcgca	nggcaattca	acaatgnngc	gtctanggac	nactgggtcca	cttgggaana	660
ggcaacttnc	tgggaatgat	ccttcattcc	canntaccna	gctanttaac	ngggggcaaag	720
ggcccnntta	tgggnntngc	ntntnnaant	tgcccttaaa	accccgngng	gtgntggntc	780
tttnnttttn	ngnt					794

<210> 538  
 <211> 766  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(766)  
 <223> n = A,T,C or G

<400> 538

ggtacgcggg	ggaaggcctt	ccttttttctg	ctgggctgcc	aacatgccat	ccagactgag	60
gaagacccgg	aaacttaggg	gccacgtgag	ccacggccac	ggccgcatag	gcaagcacccg	120
gaagcacccc	ggcgccgcg	gtaatgctgg	tggtctgcat	caccaccgga	tcaacttcga	180
caaataccac	ccaggctact	ttgggaaagt	tggtatgaag	cattaccact	taaagaggaa	240
ccagagcttc	tgcccaactg	tcaaccttga	caaattgtgg	actttggtca	gtgaacagac	300
acgggtgaat	gctgctaaaa	acaagactgg	ggctgtccca	tcattgatgt	ggtgcatcg	360
gctactacaa	agttctggga	aagggaaagc	tccaaagcaa	nctgtcatcg	tgaaggccaa	420
atcttcacag	aagagctgag	gagaaaaata	agantgttgg	ggggcctgtg	tctggtgctt	480
gaagcccatt	ganggagttt	aattaatgct	actcttttga	aaaaaanann	aananaaaaa	540
gacctgccc	gcggcngtaa	ggcaattcac	cnttgnngcg	tctaaggacc	actggccaan	600
tgggaanang	gcnaanntcc	tgggaatngt	tcntcaattc	cccaattaac	caanaangna	660
acnnngggcca	nnnggcaccc	ttatggntcc	ctncctttng	gaactngcct	tttaatecnc	720
cngaggggnt	tgctccttnt	ntttntgnnt	ggggtaatna	aaagtn		766

<210> 539  
 <211> 789  
 <212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(789)

<223> n = A,T,C or G

<400> 539

accattgggtg	gccaatatgat	ttgatggtaa	gggagggatc	gttgacctcg	tctgttatgt	60
aaaggatgcg	tagggatggg	agggcgatga	ggactaggat	gatggcgggc	aggatagttc	120
agacgggtttc	tatttcctga	gcgtctgaga	tgtagtatt	agttagtttt	gttgtgagtg	180
ttaggaaaag	gcatacagga	ctaggaagca	gataaggaaa	atgattatga	gggcgtgatc	240
atgaaaggtg	ataagctctt	ctatgatagg	ggaagtagcg	tctttagtag	ctacttgccg	300
tgcatgtgcc	cccgcgctact	tgactttctt	ttntatttnt	tttattnttt	ttgactactt	360
agaattttca	caatttcta	aagattgttc	caagtctctc	atgtgcaagc	tttaaaggat	420
gactcttgcc	atztatgtac	ctcggnccgc	accacgctaa	gggcaaattc	agcacacttg	480
cggncgttct	aagtggatcc	nagctcggtc	caaccttgcc	tatcatggca	tactgggtccc	540
tngtgaaatg	tatcccttac	aatcncacac	atcnancccg	aanctaaann	taaanctggg	600
gccaataata	ctactncata	atgctcncn	ctgccttcca	ncnggaacnt	gtgcncctnt	660
tatnatggca	acncggaagn	gtggttgccc	ttcctctcta	aaacntgnng	gntngttgga	720
aggganctct	aggnnnccgt	ccaattggan	ncgaaattnt	agctntntac	naaanatntt	780
tttttccgc						789

<210> 540

<211> 747

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(747)

<223> n = A,T,C or G

<400> 540

acttttaagg	gcataataag	ggttaacatt	ctaggcagta	taaacacacc	ccataatgca	60
agtaataggt	aatctagaga	tgtggacttt	attgctatat	gggaattaca	tttaaatttg	120
agggcatttt	atataaagaa	aaatacagac	ctataaagt	tggcatattc	attaagttat	180
cttttaatat	ttttttctag	aaaacagggtg	acatttgtat	ctacgataaa	aattttttata	240
cagaacctac	tgccctcaa	tgaatcccat	caagaaaact	agtttctatt	gnattaagta	300
actcaaaata	aattatcact	tcgaaaactt	gctttccaca	ctaaggtaag	tcagactaga	360
tgaacactcc	agaattttta	ctacagactg	ttttaagtta	gaagtgatgg	caattttataa	420
attgagaata	tcctccctga	tgccctaact	ggccaaacca	aaatctaaga	aagcagtgc	480
ncctcttact	atnatgaact	tctgaatang	gtagggacct	cctggcntan	nnatgaaaan	540
ncctggccga	ccccctagg	aatccncaact	gggggcctnn	anggaccnan	tggccaantt	600
gnnanngggn	aangnnccctg	gnaatgtccn	caattcncna	atnccgncna	aagtaacngg	660
gcccnngggg	annnnnangn	ngnncnccnn	nnngaannng	cccttnaann	ncecgngggg	720
ggngggntct	nnncnnnncc	nnngggg				747

<210> 541

<211> 773

<212> DNA

<213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(773)  
 <223> n = A,T,C or G

<400> 541

cgagggtacca	tgaataacat	atatttcata	aggttcagtt	acaaaatgga	ttgtttcaaa	60
tggcaatttc	ttacactaac	ctgattatga	aaaaaagaag	tctgtatcat	ctgcttccaa	120
gtctgttatg	tccaaatata	ttttaattat	gcatttattt	tgctactttt	ataaatatta	180
gagatttcac	cttaaattat	ttttgtaact	agttctagaa	catgttttcc	aattattatt	240
tttctaattg	agacatataa	ttgacctatg	tttatgcata	tatgttctct	acacagttaa	300
acttttttta	aaaagaatag	taaagaaaat	gcggaagctc	tggctctcca	aggcaaagtc	360
aaaaaaaaaa	aaaaagcggg	ggggaatgcg	aggaacattt	tattacacct	cctgatttca	420
ctccttgagt	ttattttctc	ccttggttat	tgggttaatgc	tagaaactgn	attctaagag	480
agcatccttt	tcagggtgacn	tgataattgg	aagatttgat	ccttcgcgca	cctgnccggc	540
ggccgtncaa	nggcnaattcc	anccactggc	ggcgggtctaa	nggatcnact	tgggccacct	600
ggctaactgg	caacnggtcc	ngggngaaat	gnatccttaa	atccncactc	nacccgacct	660
aangaactgg	ggcaagggnc	accctatggg	gctcngcctt	cnngaantnn	cnnccttaan	720
aaccnggggn	gntgggnntct	nnnnnannnn	cnnntgngg	gnntaanaag	ann	773

<210> 542  
 <211> 770  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(770)  
 <223> n = A,T,C or G

<400> 542

cgaggtaactt	tttttttttt	tttttttttt	tttttttttag	aattctgaat	tttattagag	60
aatatatcta	aaatacaata	tttattaagt	tatgatata	tgnctgaatg	gaaatatact	120
ctgnatcgca	actctaatta	taacaatttt	tacagataat	acttcattta	tatctctgna	180
attcaaaagt	cattaaatta	caacagaatt	catattttaag	ataactttgc	tataaatata	240
taataatttt	taaagttttt	ctttaatata	acatcttgaa	atcatgaaca	tttatttttt	300
ctgggttaca	ttcatagaat	catgactatt	ttacctgatt	tgctttaaact	agctcaattt	360
atcttggtta	tggatttgca	ctcaccattc	tactttccta	tgtttaaaag	cacatttttag	420
tcacaattgn	gagtgtcat	cacctacat	gctgtgacaa	aggcaagggc	ctgcccgggc	480
ggccgtncaa	anggcgaatt	cncaactgg	cgccgggtcca	agtggancga	ctcggaccaa	540
ctngggaaca	tggcaactgg	tcccggggaa	atggaaccgt	acattcccca	natcagccga	600
ncttaggtaa	acngggggcn	aaggggggta	cncataatgg	nggtccnccc	ttcatngaac	660
cgngccctnn	tatnatgcac	cccggagggt	nnttngcctc	ctcntnnnnn	ntcngntgtg	720
gagggagtc	nggggggtnc	cangggggna	aaaantgccc	ngnccccgng		770

<210> 543  
 <211> 748  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)...(748)

<223> n = A, T, C or G

<400> 543

accgcgggat	gcccctcatt	tacataaata	ttatactagc	atttaccatc	tcacttctag	60
gaatactagt	atatcgctca	cacctcatat	cctccctact	atgcctagaa	ggaataatac	120
tatcgctgtt	cattatagct	actctcataa	ccctcaacac	ccactccctc	ttagccaata	180
ttgtgcctat	tgccatacta	gtctttgccc	ctgcgaagca	gcggtgggcc	tagccctact	240
agtctcaatc	tccaacacat	atggcctaga	ctacgtacat	atgctaggcc	atatggtaac	300
tctatgttta	acattttgag	gaactgccaa	actgttttcc	aaagtgacta	cactatttta	360
cattcccacc	ttgaagggtc	aattttctga	cattctacca	acatgggtaa	tggctgcttt	420
ttatttagca	accttaatgg	gtgtgaagag	atactcaatg	ggaatttgat	tgattcccta	480
angctaata	tttggnttct	ttctggctga	ngccagagnt	atctntttgg	gaaaattatt	540
naancctgnc	atttaacnng	cngatttatn	tgatntanaa	tnttntattt	gganccngcc	600
tttaagnaag	nttaaaattn	ncaatnttgg	ggcttncttt	tggccatgan	naannttaat	660
nntannanna	attnnntncn	annnggcng	tnaannannn	nnnanaaana	annnttnnna	720
anaannactt	tttnnnnnna	cntggcgg				748

<210> 544

<211> 327

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(327)

<223> n = A, T, C or G

<400> 544

actttttttt	tttttttttt	tttttttttt	tttttttttt	ttggctctag	aggggggtaga	60
gggggtgcta	tagggtaaat	acggggcccta	tttcaaagat	ttttagggga	attaattctg	120
ggacgatggg	catgaaactg	tggtttgtct	cacagatttc	anagcattga	ccgtagtata	180
cccccggtcg	tgtagcgggtg	aaagtgggtt	ggtttaaacg	tccgggaatt	gcactctgtt	240
ttaagcctaa	tgtggggaca	gctcatgagt	gcaagacgtc	ttgtgatgta	attattatac	300
gaatgggggc	ttnaatcggg	agtacct				327

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